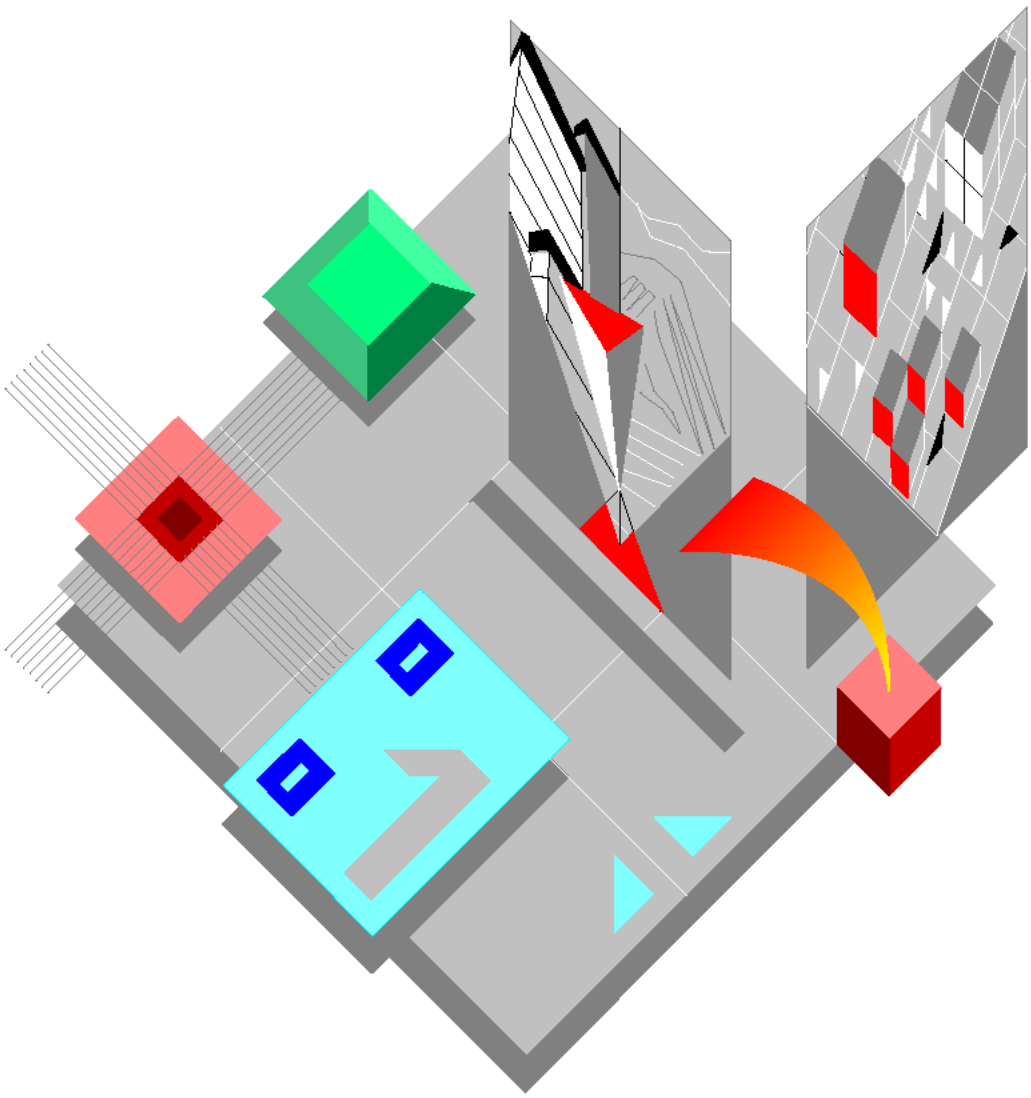
PRINTER

PR4 SR

SERVICE MANUAL

Code **XYAA6336**



PUBLICATION ISSUED BY :

Olivetti Tecnost S.p.A.
Via Camillo Olivetti , 8
10011 Agliè (Italy)

Copyright © 2004, by Olivetti
All rights reserved

Printed in Italy by :

UPDATING STATUS

DATE	CODE
09/1996	681810V-00
02/1998	681811J-01
06/1998	681812K-02
03/2004	XYAA6336

PREFACE

This manual has been written for the field engineers who will be servicing the PR4 and PR4 SR printers.
It provides all the information needed to install and service these printer models.

SUMMARY

This manual is divided into eight chapters.
The first four chapters provide the installation, functional check and adjustment procedures while the remaining chapters provide the disassembly and adjustment procedures.

PREREQUISITES

Knowledge of similar products is helpful to better understand the topics discussed in this manual.

REFERENCES

User's Guide - (provided with the product)
Spare Parts Catalogue - code XYAA4789

DISTRIBUTION: General

FIRST EDITION: September 1996

SECOND EDITION: February 1998

THIRD EDITION: June 1998

TABLE OF CONTENTS

1. OVERVIEW 1-1

1.1 INTRODUCTION 1-1

1.2 OVERALL VIEW OF THE PRINTER 1-2

1.2.1 PR4 Printer 1-2

1.2.2 PR4 SR Printer 1-3

1.3 BLOCK DIAGRAM 1-5

1.4 INTERNAL CONNECTIONS 1-6

1.5 POWER SUPPLY CHARACTERISTICS 1-8

1.6 LAYOUT OF THE DRAWER AND DISPLAY CONNECTORS 1-9

1.7 RS-232 SERIAL INTERFACE CONNECTOR LAYOUT 1-10

1.7.1 RS-232 Serial Interface Connector Layout 1-10

1.7.2 IEE 1284 Parallel Interface Connector Layout 1-11

2. INSTALLATION 2-1

2.1 UNPACKING THE PRINTER 2-1

2.2 CHECKING THE PACKING CONTENTS 2-2

2.2.1 PR4 2-2

2.2.2 PR4 SR 2-3

2.3 REMOVING THE BLOCKAGES USED FOR TRANSPORTATION .. 2-4

2.3.1 PR4 2-4

2.3.2 PR4 SR 2-5

2.4 CONNECTIONS 2-6

2.5 SETTINGS TO BE MADE ACCORDING TO THE PAPER ROLLS USED (PR4 SR) 2-7

2.5.1 Inserting the Rewinder for 76.2 mm Rolls 2-8

2.5.2 Inserting the Rewinder for an 82.5 mm Roll 2-9

2.5.3 Inserting the Rewinder for a 114.3 mm Roll 2-10

2.5.4 Inserting the Rewinder for a 139.7 mm Roll 2-11

2.5.5 Installing the Paper Guide 2-12

2.5.6 Writing Position 2-13

3. FUNCTIONAL CHECKS 3-1

3.1 LEDS 3-1

3.2 CONSOLE INDICATIONS 3-2

3.3 SLIP TEST 3-4

3.4 ROLL TEST 3-4

4. SETUP AND ADJUSTMENTS 4-1

4.1 OPERATOR TEST 4-2

4.2 SETUP FROM THE CONSOLE 4-2

4.2.1 Accessing this Setup Mode 4-2

4.2.2 Selecting the Parameters 4-3

4.2.3 SET-UP Diagram (Olivetti Emulation) 4-4

4.2.4 SET-UP Diagram (EPSON Emulation) 4-6

5. DISASSEMBLY/REASSEMBLY PROCEDURES 5-1

5.1 OVERVIEW 5-1

5.2 REMOVING THE CASE 5-1

5.3 LOCATING THE COMPONENTS ON THE ELECTRONIC BOARD (SERIAL VERSION) 5-7

5.4 LOCATING THE COMPONENTS ON THE ELECTRONIC BOARD (PARALLEL VERSION) 5-9

5.5 REMOVING THE PRINT ASSEMBLY 5-11

5.6 REMOVING THE PRINT HEAD 5-13

5.7 CUTTER ON THE PR4 5-14

5.7.1 Cutter on the PR4 SR 5-15

5.8 REMOVING THE PLATEN 5-16

5.9 REMOVING THE CARRIAGE MOTOR 5-17

5.10 REMOVING THE RIBBON MOVEMENT PIN 5-18

5.11 OUT OF PAPER MICROSWITCH ASSEMBLY 5-19

5.12 REMOVING THE REWIND CLUTCH ASSEMBLY 5-21

5.13 REMOVING THE DOCUMENT DETECTION PHOTOSENSORS .. 5-21

5.14 REMOVING THE SLIP DETECTION PHOTOSENSORS .. 5-22

6. ADJUSTMENTS 6-1

6.1 ADJUSTING THE PLATEN ON THE BASIC STRUCTURE 6-1

6.2 ADJUSTING THE PARALLELISM AND PRINT HEAD-PLATEN DISTANCE 6-2

6.3 ADJUSTING THE TENSION OF THE CARRIAGE TRANSPORT BELT 6-2

6.4 ADJUSTING THE OUT OF JOURNAL AND RECEIPT PAPER MICROSWITCH SUPPORT 6-2

6.5 MOUNTING THE SNAP RINGS ON THE CARRIAGE TRANSPORT ASSEMBLY 6-2

6.6 ADJUSTING THE CLEARANCE OF THE DOCUMENT INSERTION SLOT 6-3

6.7 ADJUSTING THE PAPER DETECTION PHOTOSENSOR 6-4

6.8 ADJUSTING THE MICR MOTOR ASSEMBLY MESH 6-5

6.9 ADJUSTMENT MENU 6-6

6.9.1 Photosensor Adjustments 6-7

6.9.2 Adjusting the Carriage 6-9

6.9.3 MICR Adjustment 6-11

7. LUBRIFICATION 7-1

8. INSTALLING THE DRAWER AND DISPLAY CARD OPTION 8-1

1. OVERVIEW

1.1 INTRODUCTION

The PR4 is a three-station impact printer, the PR4 SR a two-station impact printer, specifically designed for the POS retail environment. It can print on forms, cheques, receipts and journal rolls with a print pitch ranging from 12 cpi to 17.1 cpi.

The receipts are cut by a CUTTER while the journal roll comes with a JOURNAL REWINDER.

The forms to be printed are automatically aligned once inserted through the front insertion slot.

Paper rolls with different widths can be used: 76.2 mm, 82.5 mm, 114.3 mm and 139.7 mm.

The codes on cheques can be read by means of the optional MICR device, while it is possible to print on the back of the cheques.

The printer is equipped with a client display SUPPORT. An optional electronic board manages the banknote drawer and client display, both of which controlled directly by the printer electronics.

The printer is compatible with the OLIVETTI STD POS and EPSON ESC POS EMULATIONS.

1.2 OVERALL VIEW OF THE PRINTER

1.2.1 PR4 Printer

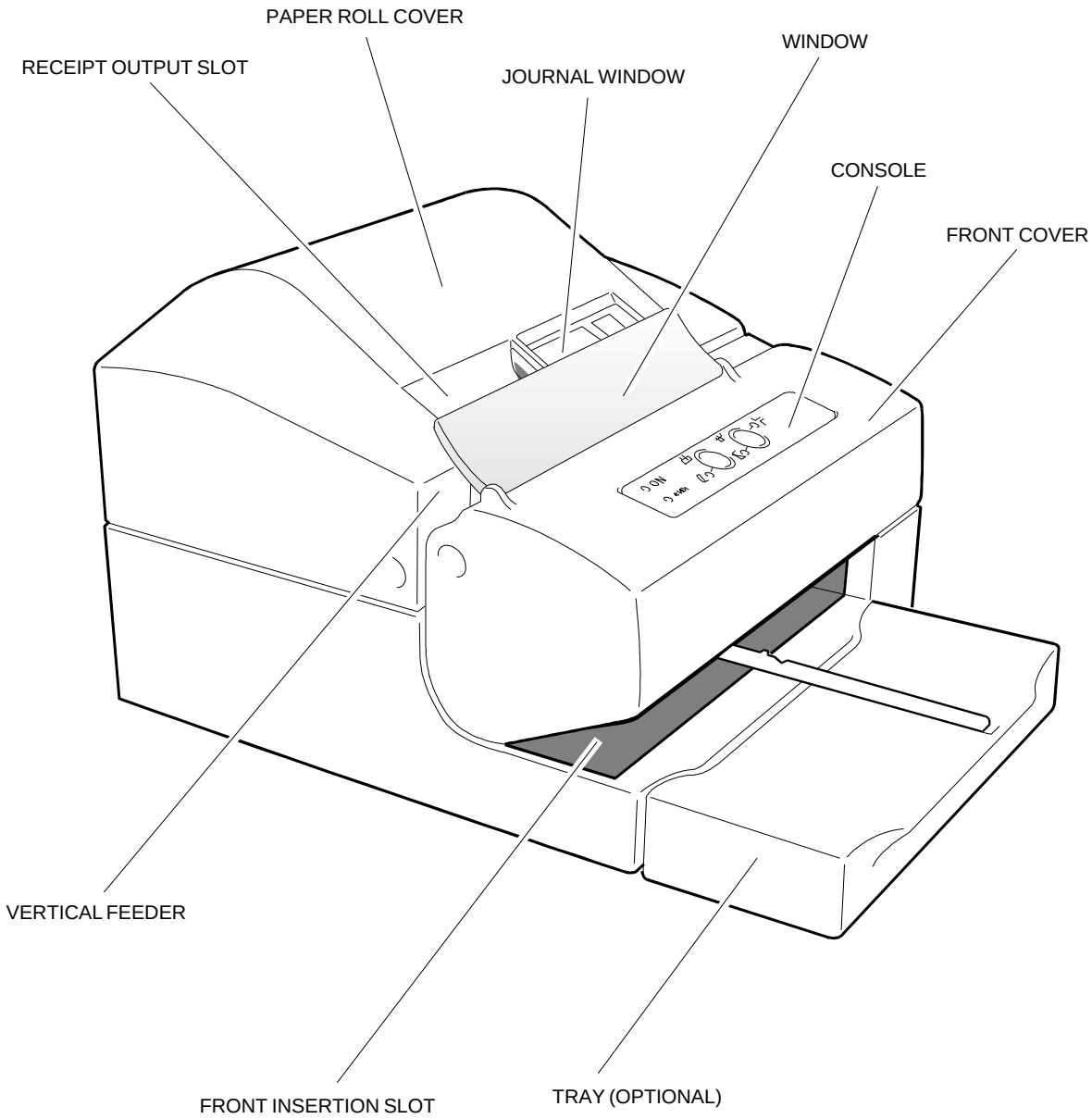


Figure 1-1

1.2.2 PR4 SR Printer

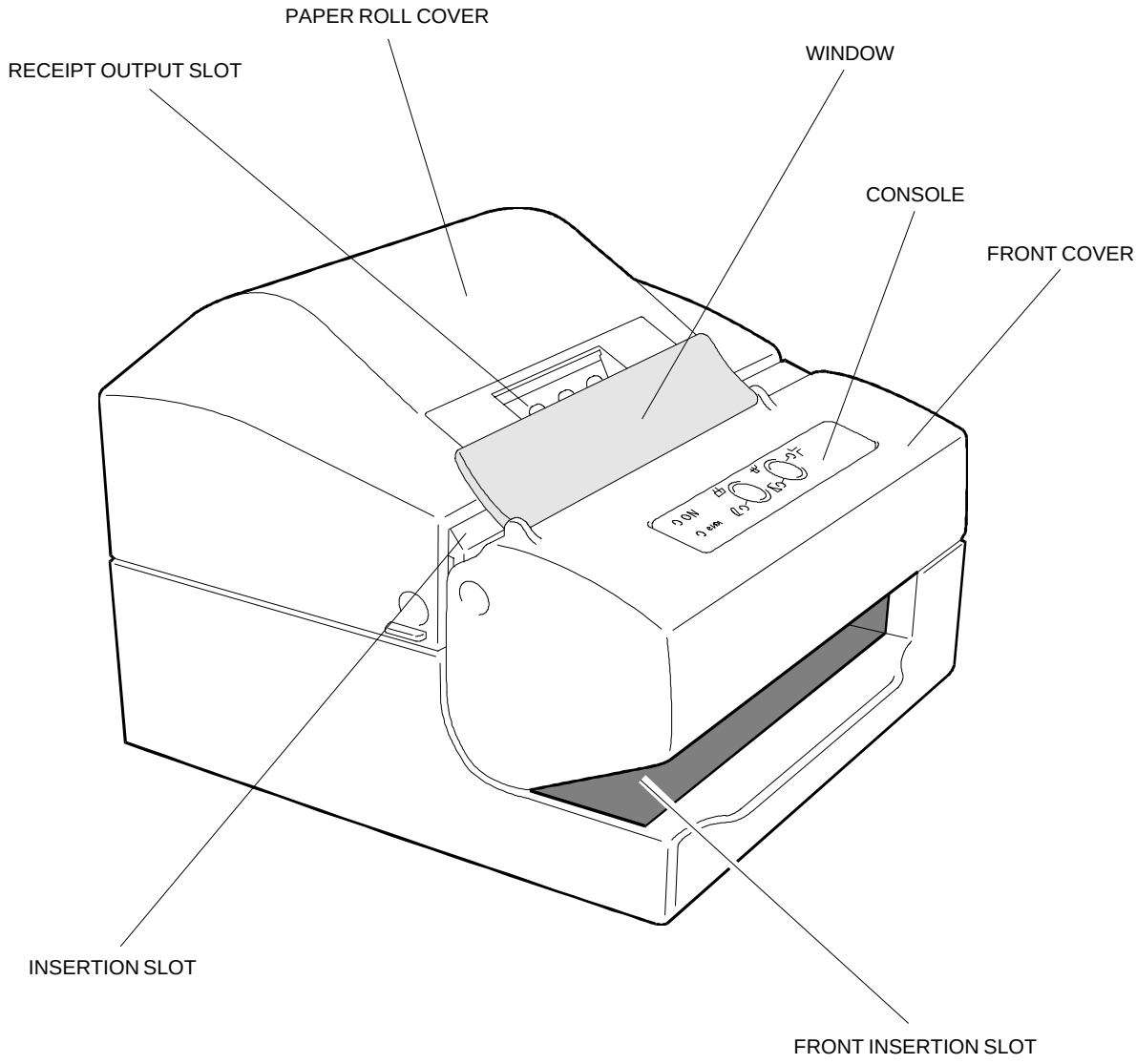


Figure 1-2

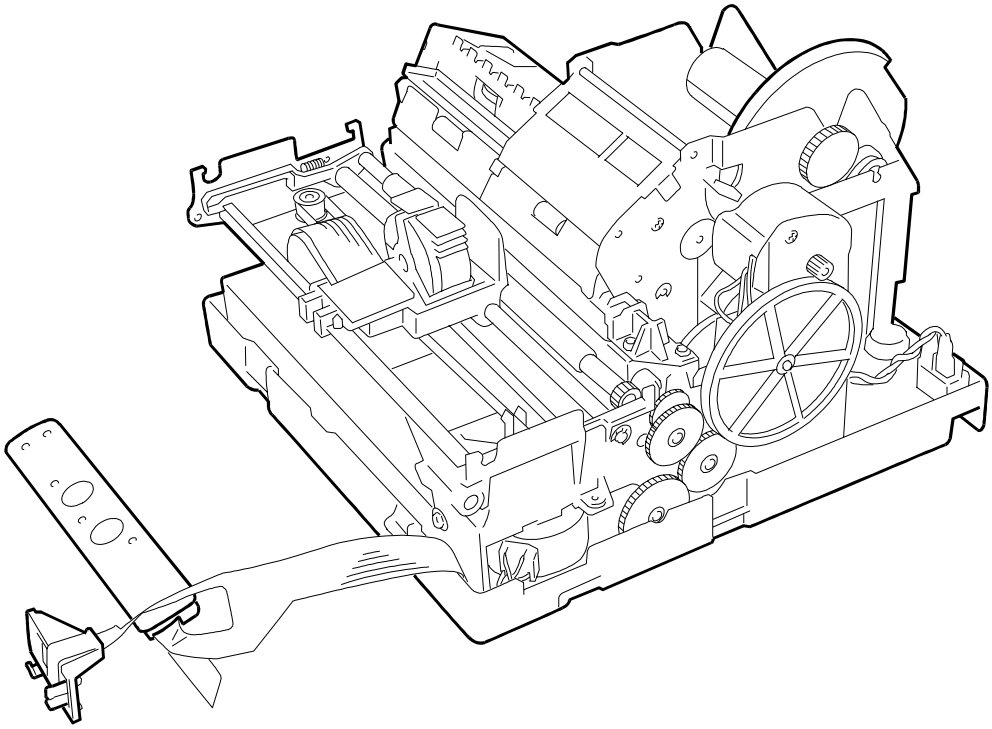


Figure 1-3

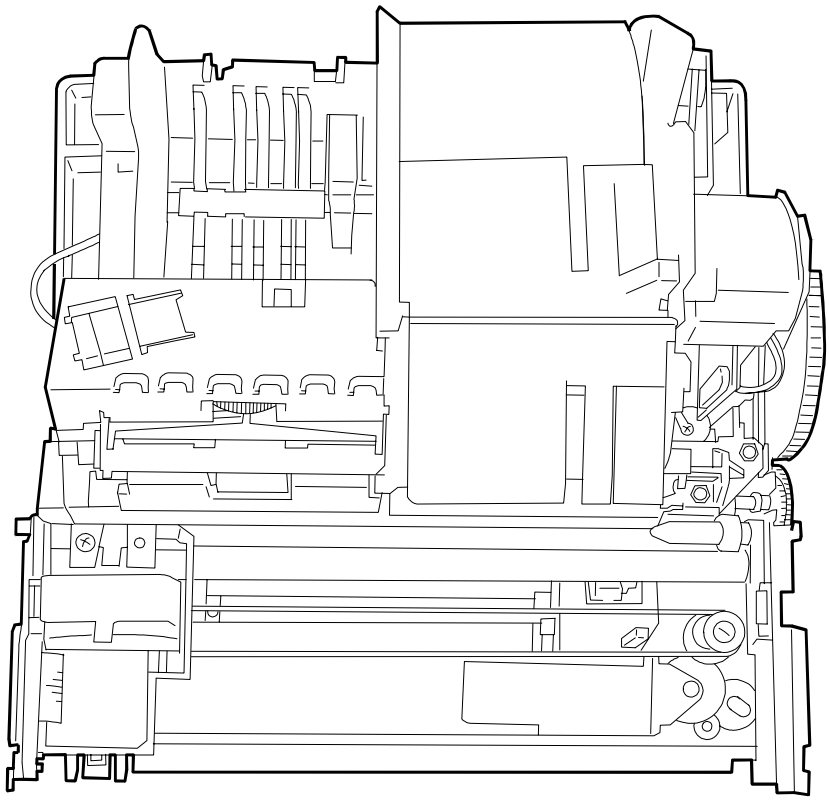
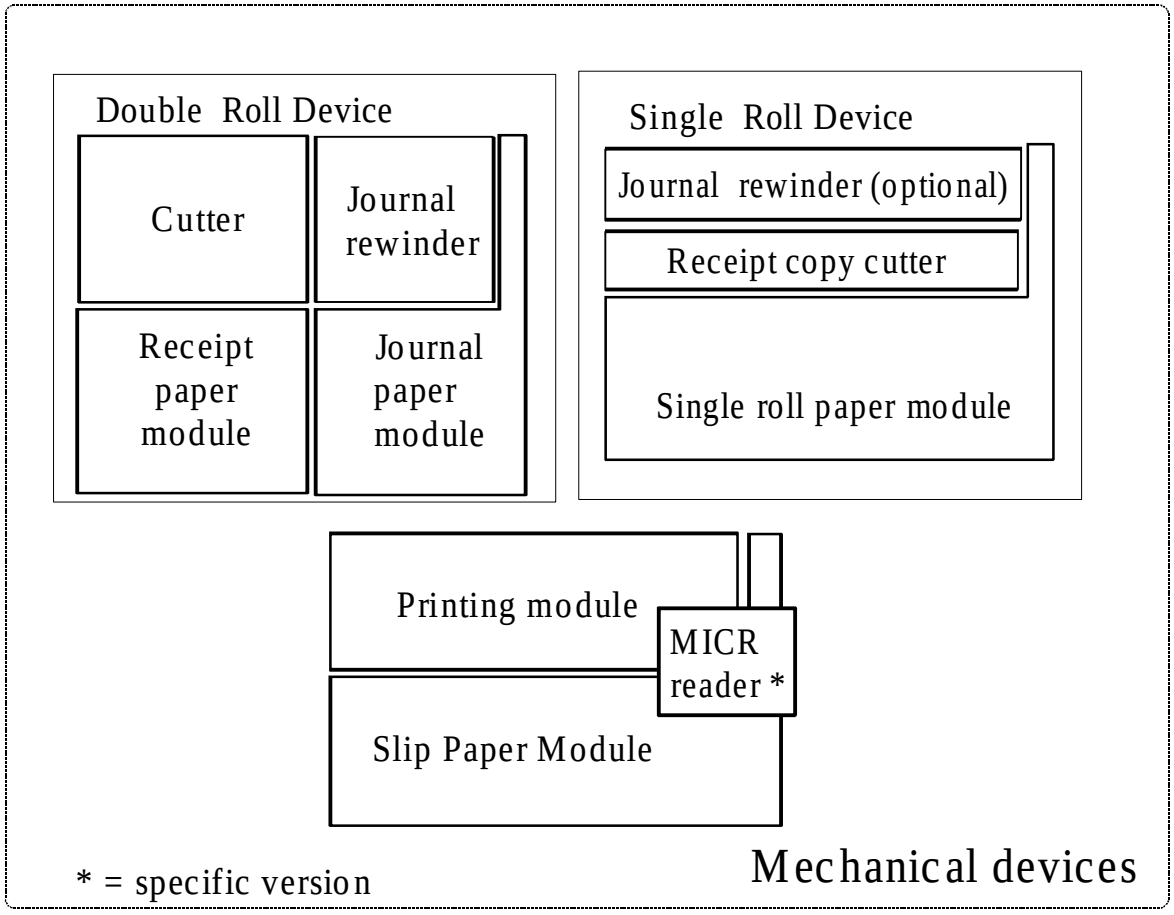
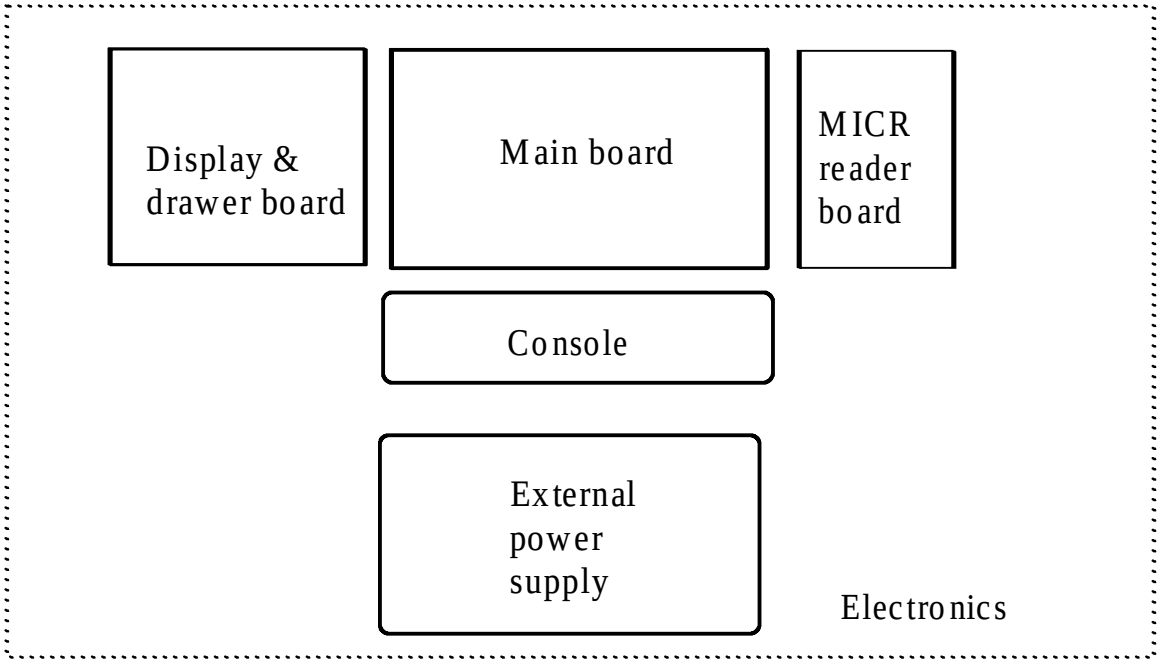


Figure 1-4

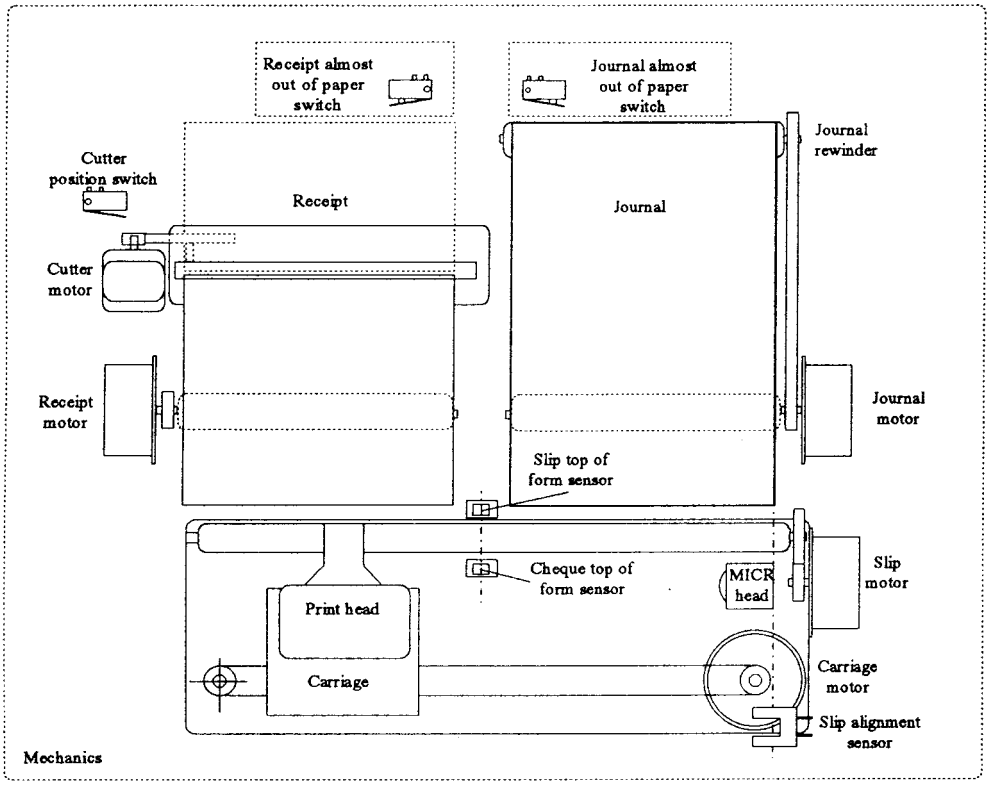
1.3 BLOCK DIAGRAM



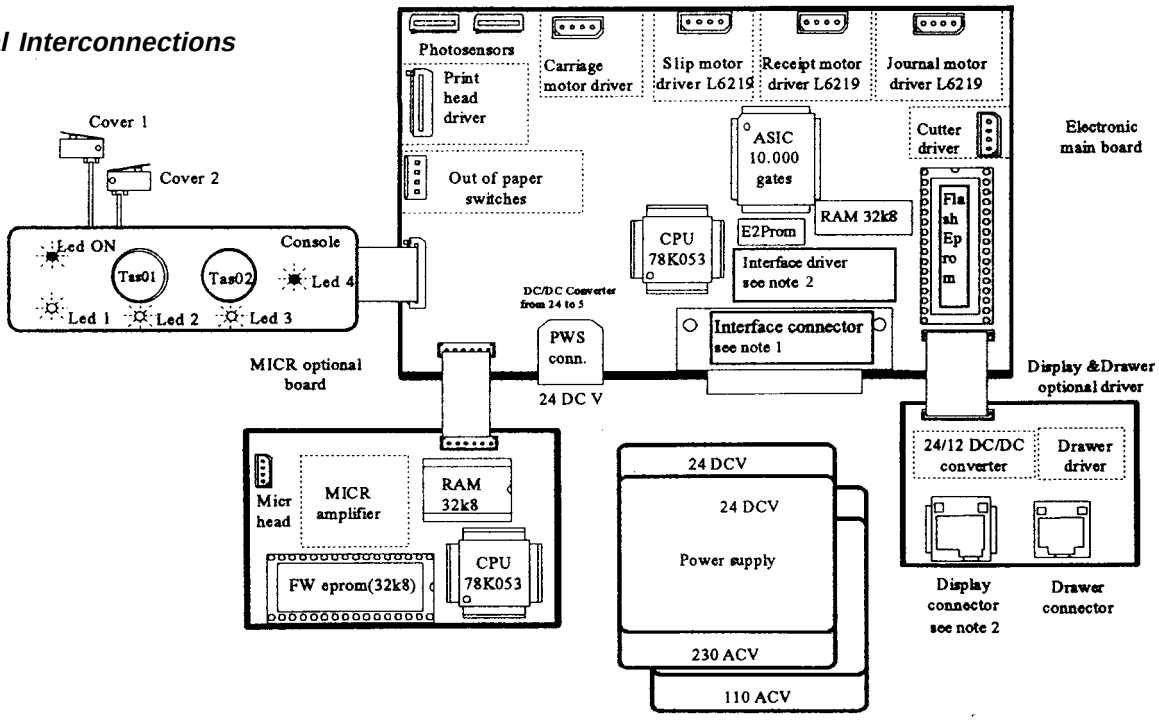


1.4 INTERNAL CONNECTIONS

PR4 Mechanical Devices



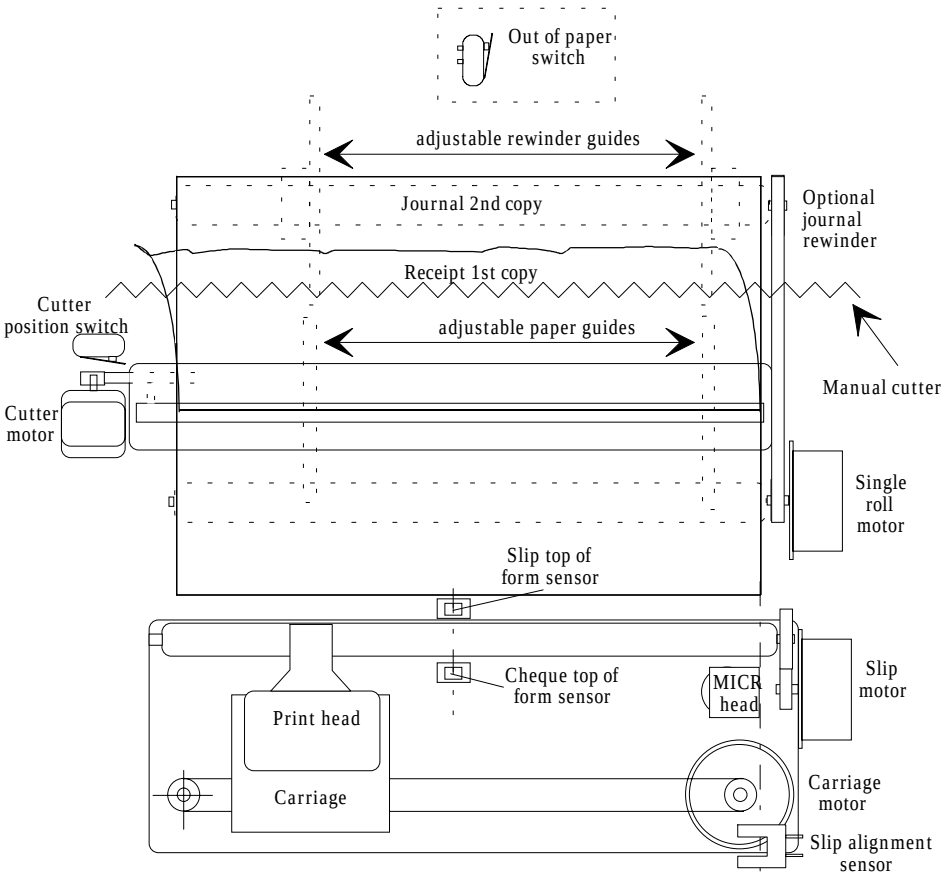
Electrical Interconnections



Note 1: On the board, a female connector is used for serial connections while a male connector is used for parallel connections.

Note 2: Type: PAL MACH 111 for parallel interface.
Type: ADM 202 JRW for serial interface.

The location of the components on the electronic board is purely indicative.


Out of paper switch
adjustable rewinder guides
Journal 2nd copy
Optional journal rewinder
Receipt 1st copy
Cutter position switch
adjustable paper guides
Manual cutter
Cutter motor
Single roll motor
Slip top of form sensor
Cheque top of form sensor
MICR head
Slip motor
Print head
Carriage
Carriage motor
Slip alignment sensor

1.5 POWER SUPPLY CHARACTERISTICS

The machine must be equipped with a power supply of the following characteristics:

DC VOLTAGE	POWER
24 V +20 -10%	45 W (max. 75 W)

The following power supplies are optionally available to the user:

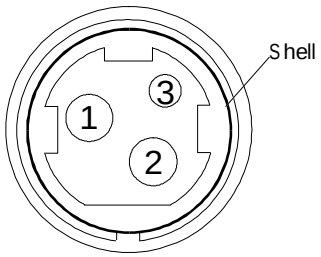
1) External AC power supply:

VOLTAGE	POWER	FREQUENCY
230 - 240 V	45 W (max 75 W)	50 - 60 Hz
115 - 230 V		

2) Internal AC power supply:

VOLTAGE	POWER	FREQUENCY
115 - 230 V	40 W (max 75 W)	50 - 60 Hz

Power Supply Connector Drawing



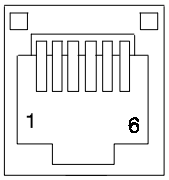
PIN Number	Signal name
1	+24 VDC
2	GND
3	Frame GND
Shell	Frame GND

1.6 LAYOUT OF THE DRAWER AND DISPLAY CONNECTORS

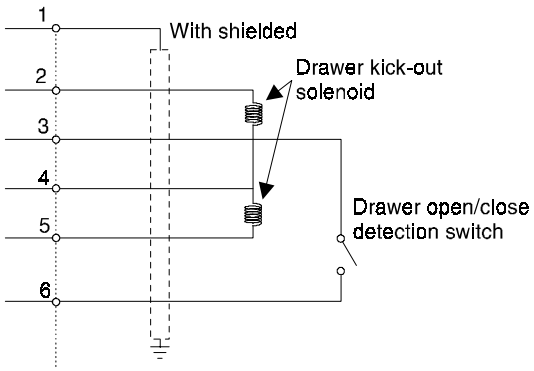
By means of the drawer and display option it is possible to drive a client drawer and display. Refer to Chapter 8 for instructions on how to install the related card.

- Drawer Connector

Solenoid resistance	24 ohm **min**
Output voltage	24 volts
Current	1 amp **Max**
Printer side connector	Molex 52065-6615 or equivalent

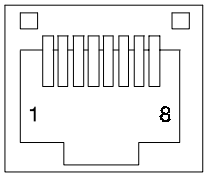


1 Frame GND
2 Drawer kick-out drive signal 1
3 Drawer open/close signal
4 + 24 V
5 Drawer kick-out drive signal 2
6 Signal GND



- Display Connector

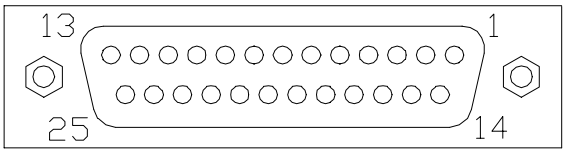
By configuring the printer in the EPSON - TMU emulation it is possible to connect the EPSON DM D203-011 display.



1 Safety ground
2 Transmit data to print
3 Receive data from printer
4 Indicates whether the printers can receive data or not
5 Indicates whether the display can receive data or not
6 Signal ground
7 Power supply terminal
8 Power supply retrace line

1.7 INTERFACES

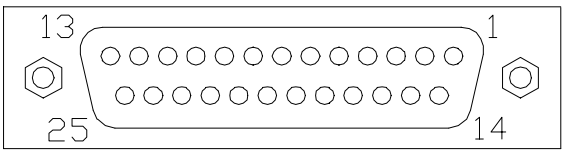
1.7.1 RS-232 Serial Interface Connector Layout



- RS232 Connector - PIN functions

Pin No	Signal name	Dir	
1	Frame GND	—-	
2	TXD	OUT	Transmitter data
3	RXD	IN	Receiver data
4	RTS	OUT	Fix to ‘Space” level
6	DSR	IN	**Space(+12)** the host can receive data **Mark(-12)** the host cannot receive data When DTR/DSR control is selected, the printer transmits data after confirming this signal. When XON/XOFF control is selected, the printer does not check this signal If the signal remains Mark for more than 1msec the printer performs a reset. (only when selected from set-up)
7	Signal GND	—	
20	DTR	OUT	When **DTR/DSR** control is selected, this signal indicates whether the printer is busy. SPACE=OK/MARK=busy When **XON/XOFF** control is selected, the signal indicates whether the printer is connected and ready to receive data. SPACE=OK /MARK=busy The signal is always SPACE except during: HW reset, Self test, Set-UP
25	INIT	IN	The printer is reset when the signal remains Space for more than 1msec (only when selected from set-up)

1.7.2 IEE 1284 Parallel Interface Connector Layout



Pin	Signal	Source
1	STROBX	Host
2 to 9	DACX (0-7)	Host/Printer
10	ACKX0	Printer
11	BUSYX	Printer
12	PAPEMX	Printer
13	SETOUX	Printer
14	AUTLFX	Host
15	FAULTX	Printer
16	IMPRAX	Host
17	SELINX	Host
18 to 25	GND	___

■

2. INSTALLATION

2.1 UNPACKING THE PRINTER

It is suggested that you carefully open the printer packaging and store it in a safe place so that it can be used again if the printer needs to be transported to another site.

The printer is protected by a polyethylene covering.

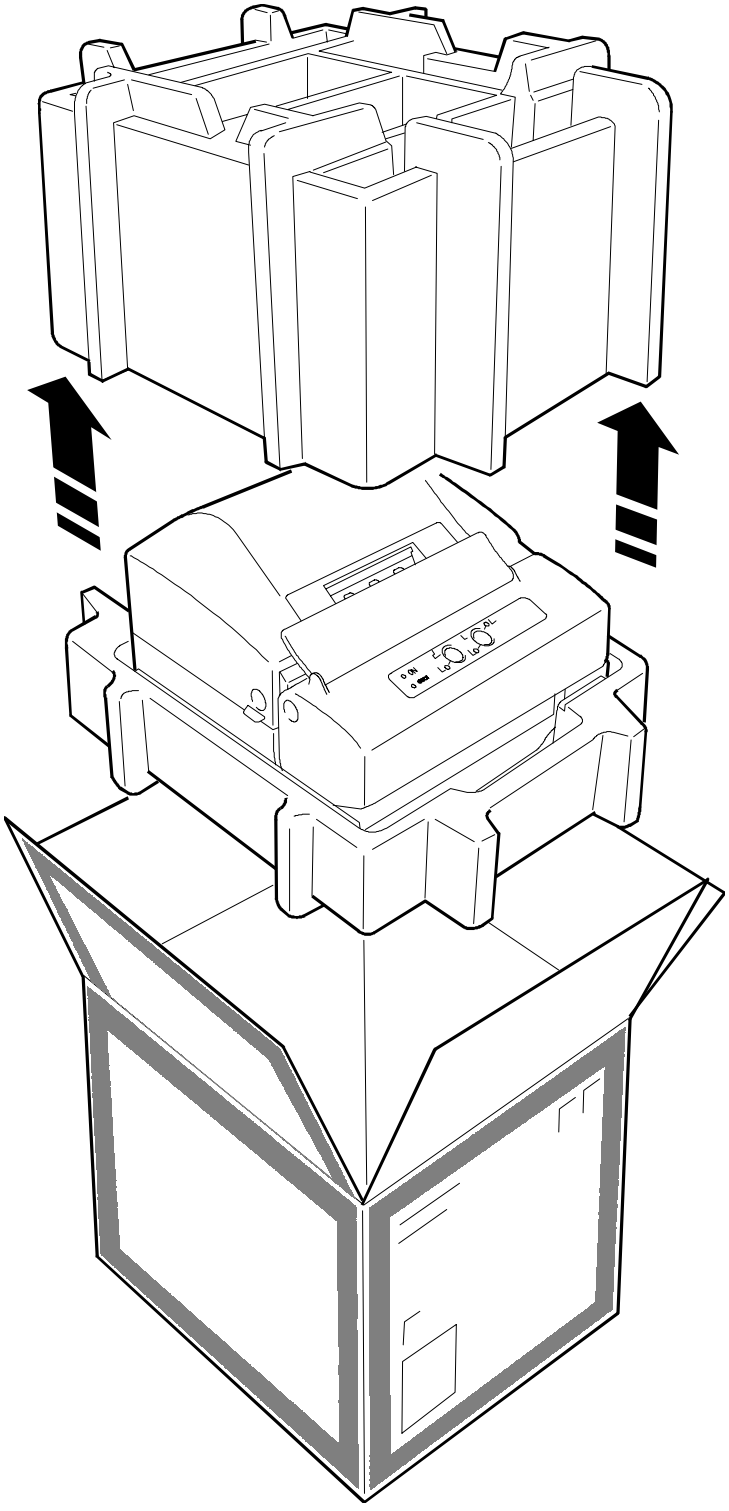


Figure 2-1

2.2 CHECKING THE PACKAGING CONTENTS

2.2.1 PR4

In addition to the printer, the packaging always contains two paper rolls, a ribbon cartridge, a client display support and two paper guides with a flange for 57 mm rolls.

Depending on the order made by the client, the following options may be present:

A Power cord

B External power supply

C Front insertion tray

Note: The packaging of the PR4 model with parallel interface must include a specific 25-pin male CANON parallel cable.

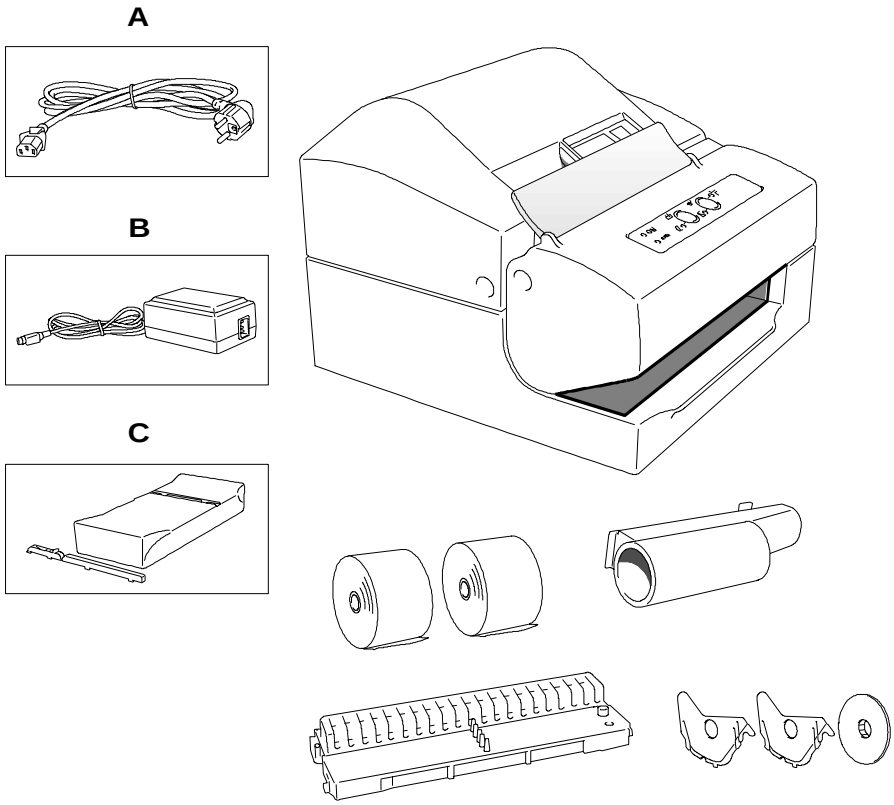


Figure 2-2

2.2.2 PR4 SR

The PR4 SR (Single Roll) packaging includes the printer, a printer roll, ribbon cartridge, client display support, two paper guides with two flanges, four spacers to form 139.7 mm., 114.3 mm., 82.5 mm. and 76.2 mm. long rolls, respectively.

Depending on the order made by the client, the following options may be present:

A Power cord
B External power supply
C Serial interface cable
D Front insertion tray

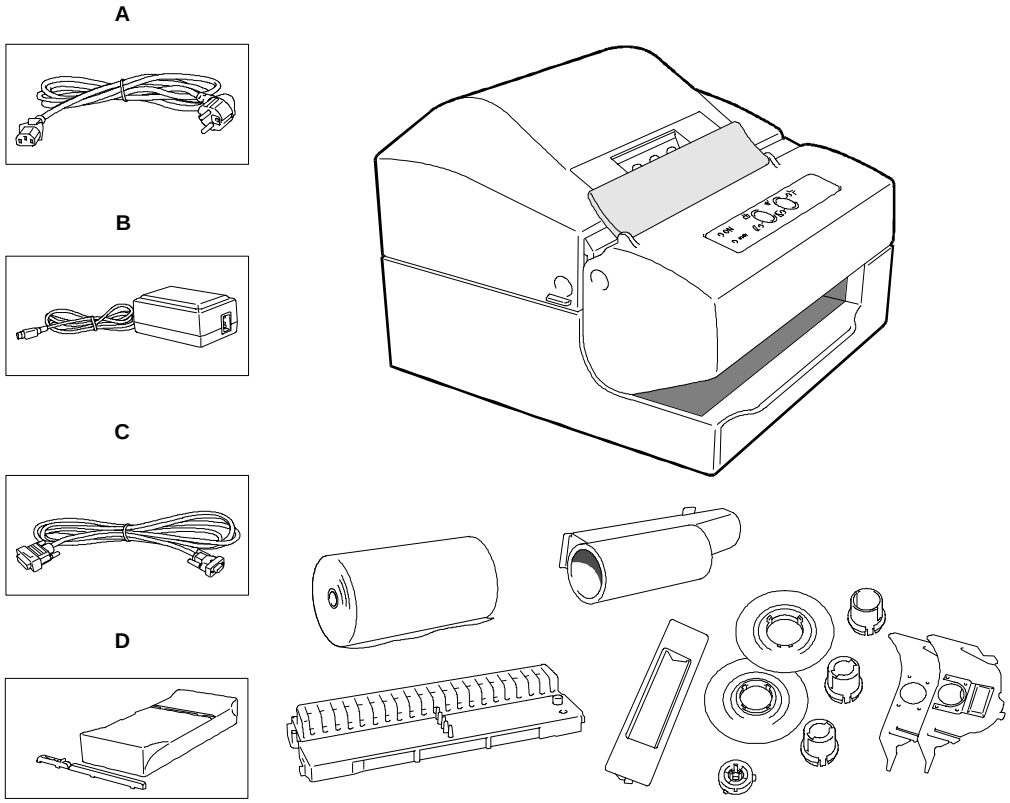
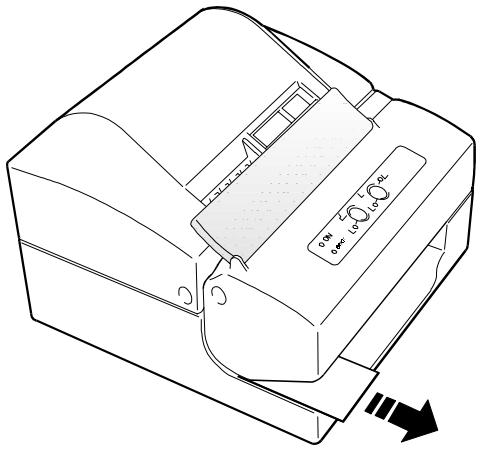


Figure 2-3

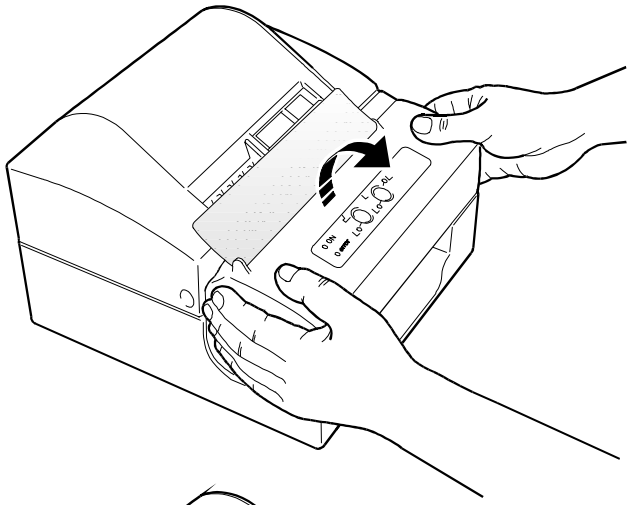
2.3 REMOVING THE BLOCKAGES USED FOR TRANSPORTATION

2.3.1 PR4

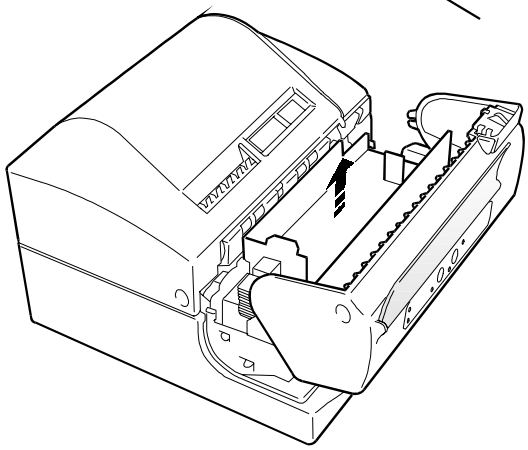
- Remove the plastic strip from the front feed slot.



- Open the front cover by turning it upwards.



- Remove the cardboard that blocks the print head.



- Close the printer cover.

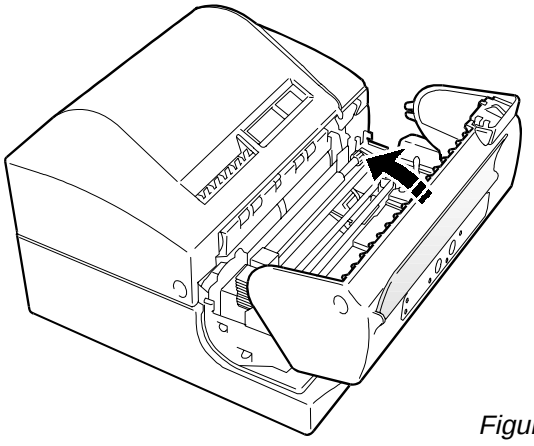
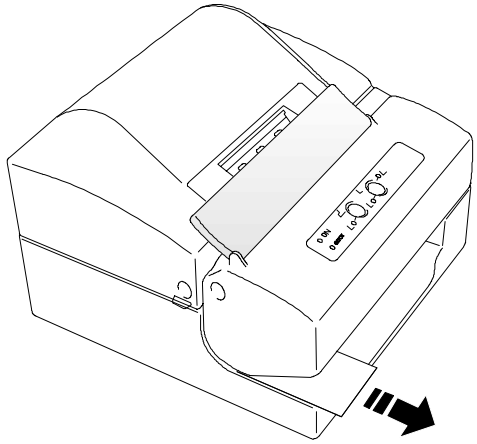


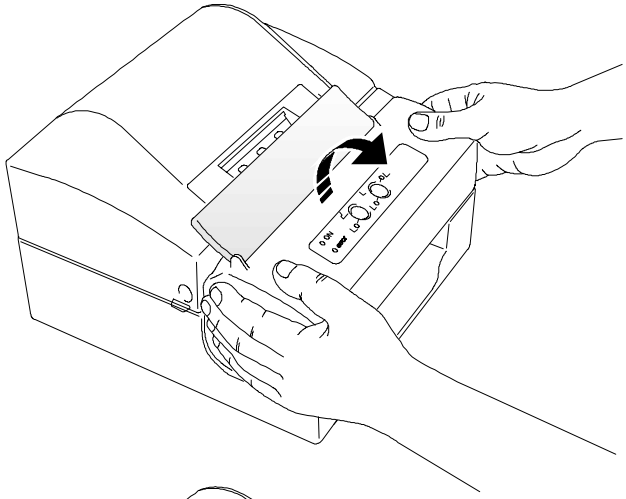
Figure 2-4

2.3.2 PR4 SR

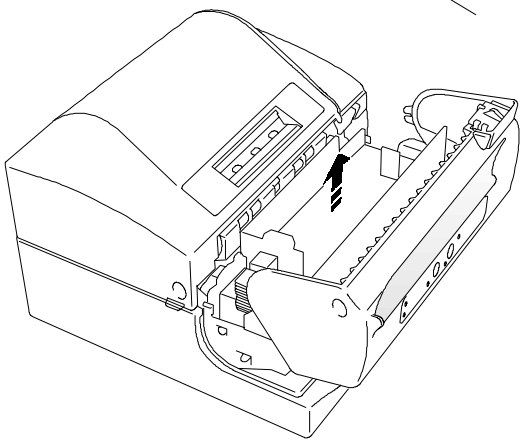
- Remove the plastic strip from the front feed slot.



- Open the front cover by turning it upwards.



- Remove the cardboard that blocks the print head.



- Close the printer cover.

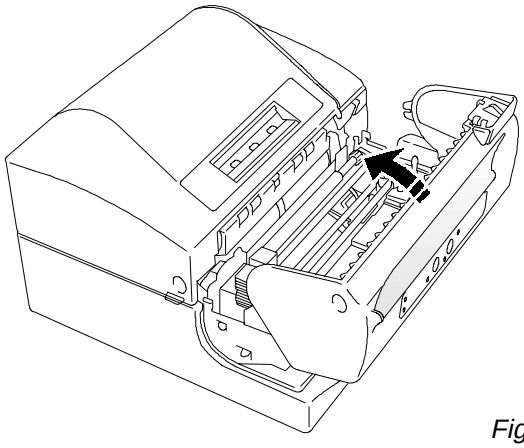
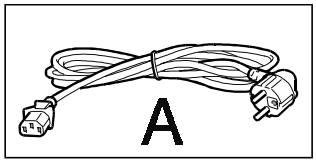
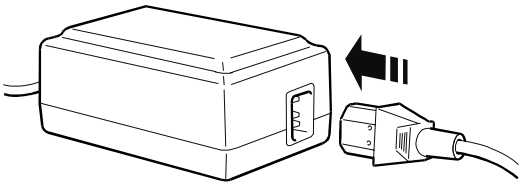


Figure 2-5

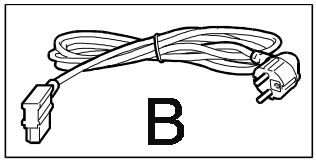
2.4 CONNECTIONS

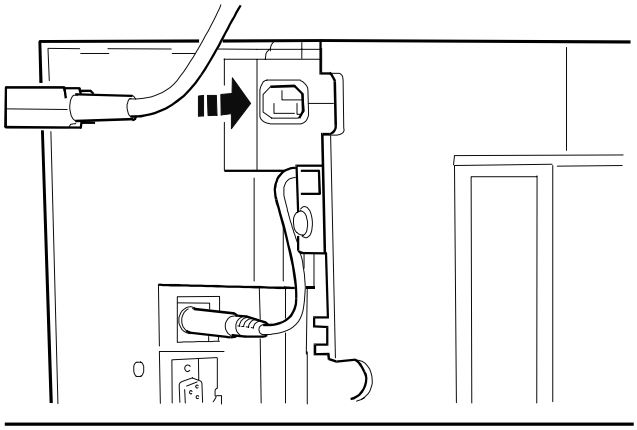


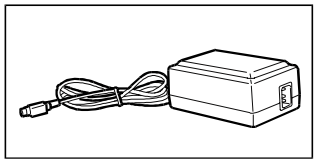


1. Attach the power cord to either the external (A) or internal (B) power supply.

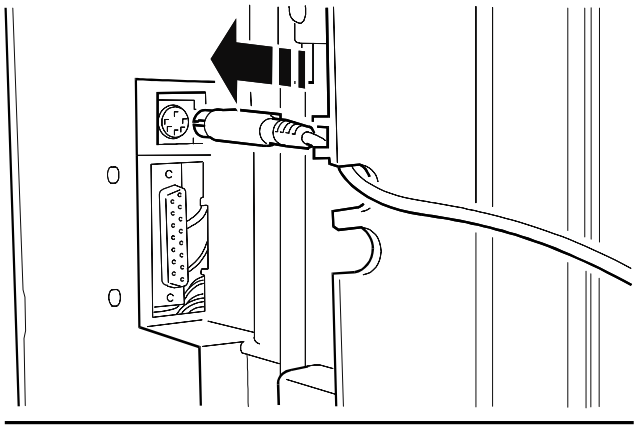
If the internal power supply is used, the power cord must have a 90° connector.

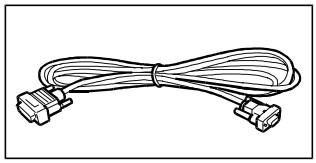




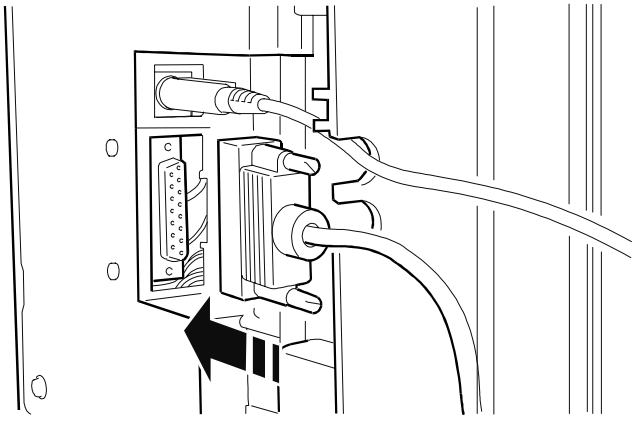


2. Attach the DC power cord to the related connector underneath the printer.





3. Attach the serial interface cable to the related connector underneath the printer.



Note: Skip step **2** if the printer is equipped with an internal power supply.

Figure 2-6

2.5 SETTINGS TO BE MADE ACCORDING TO THE PAPER ROLLS USED (PR4 SR)

The printer is designed to be able to use four types of paper rolls with the following widths: 76.2; 82.5; 114.3 and 139.7 mm.

To insert the paper roll, take the rewinder which is found in the printer and appropriately assemble the spacers and flanges (see Figure 2-7) according to the dimensions of the paper to be used.

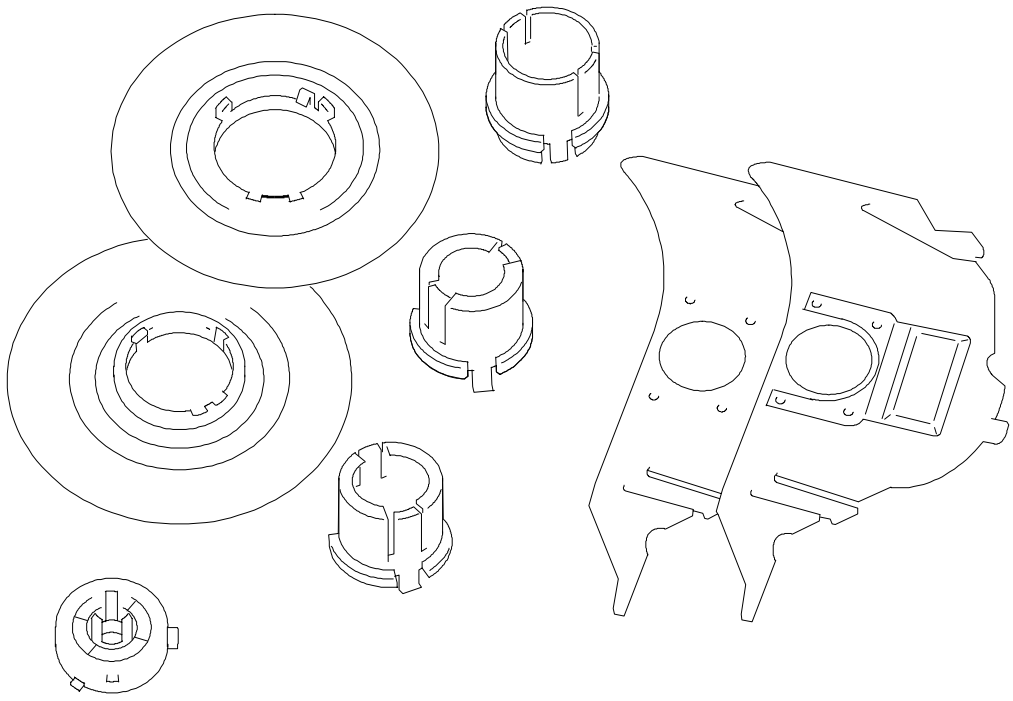


Figure 2-7

2.5.1 Inserting the Rewinder for 76.2 mm Rolls

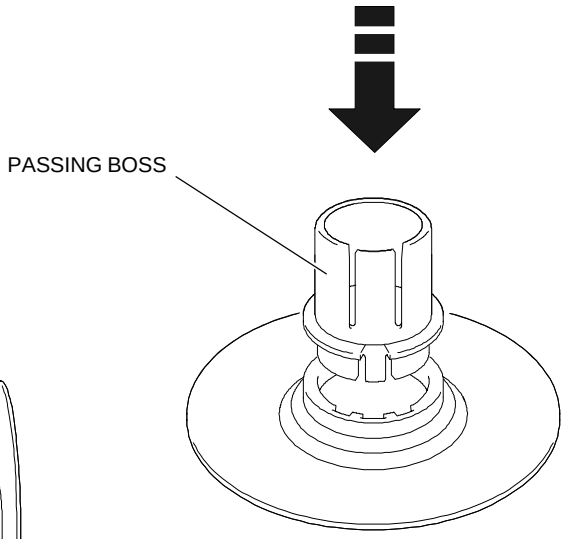


Figure 2-8

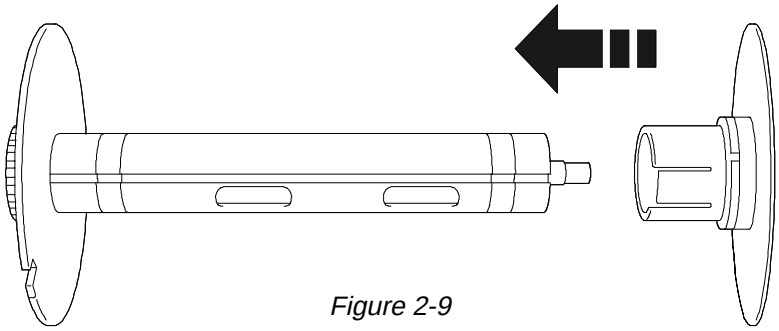


Figure 2-9

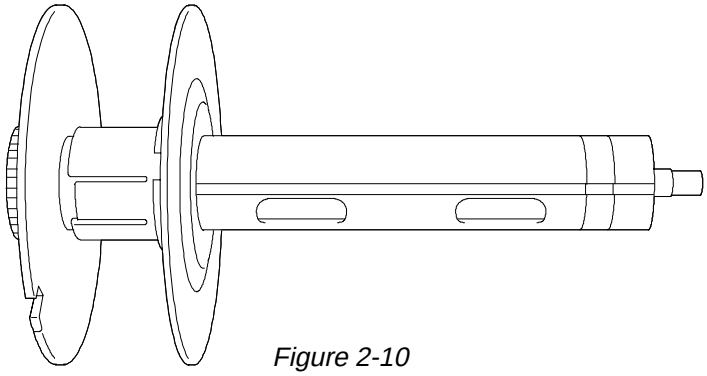


Figure 2-10

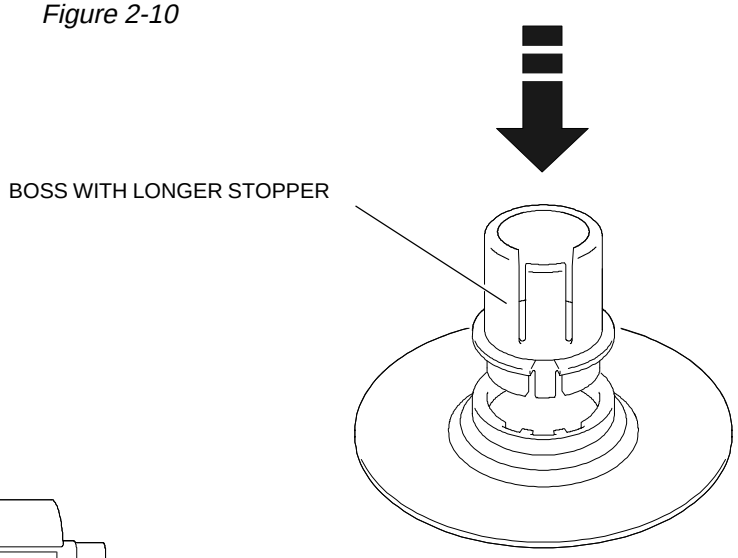


Figure 2-11

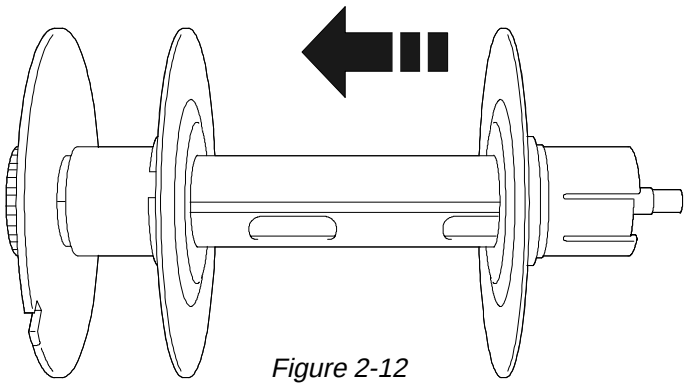


Figure 2-12

2.5.2 Inserting the Rewinder for an 82.5 mm Roll

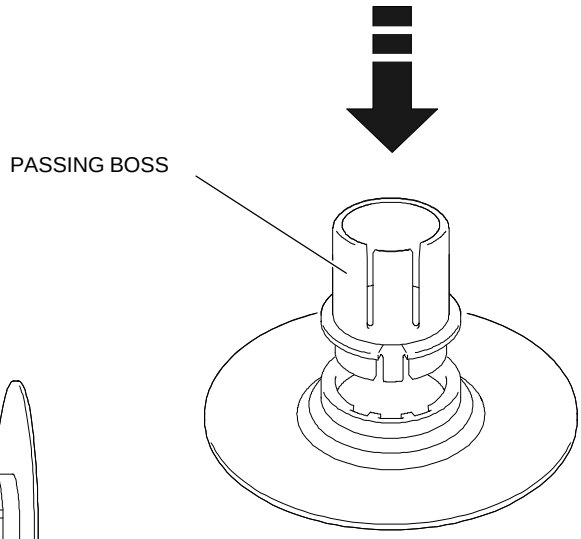


Figure 2-13

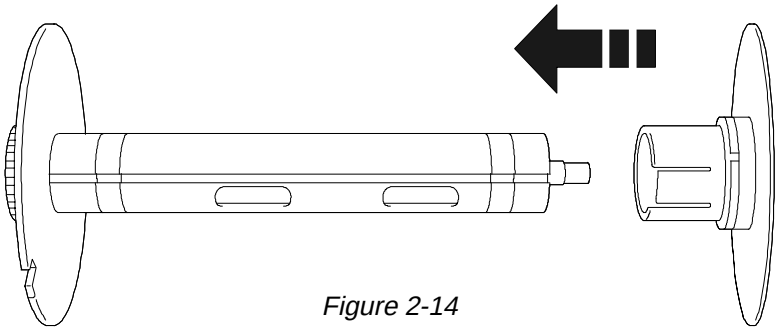


Figure 2-14

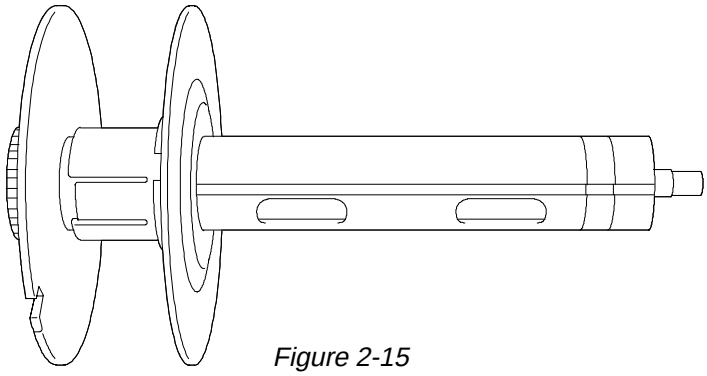


Figure 2-15

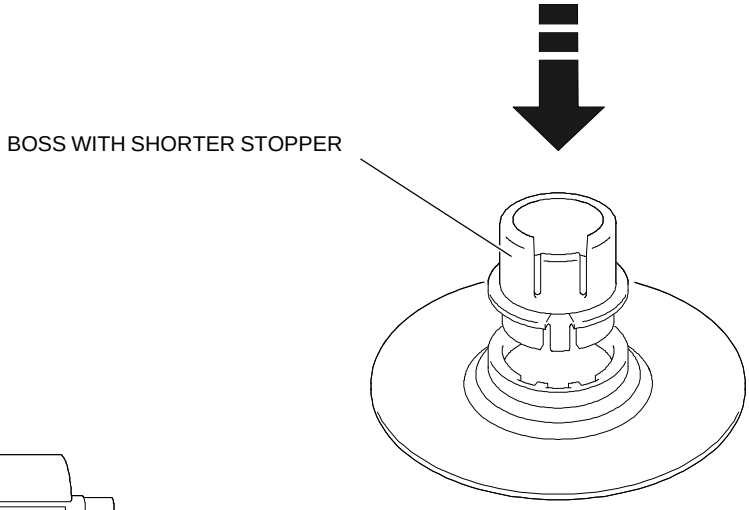


Figure 2-16

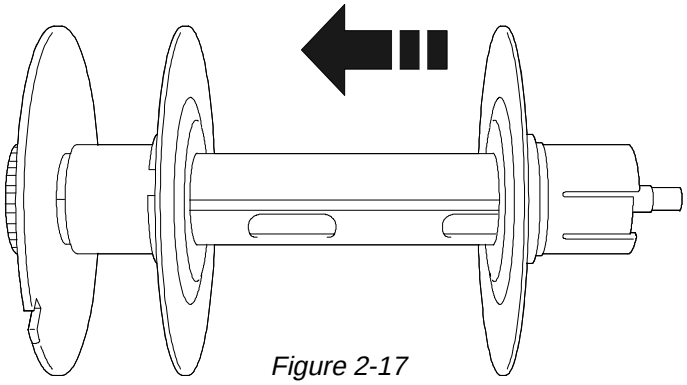


Figure 2-17

2.5.3 Inserting the Rewinder for a 114.3 mm Roll

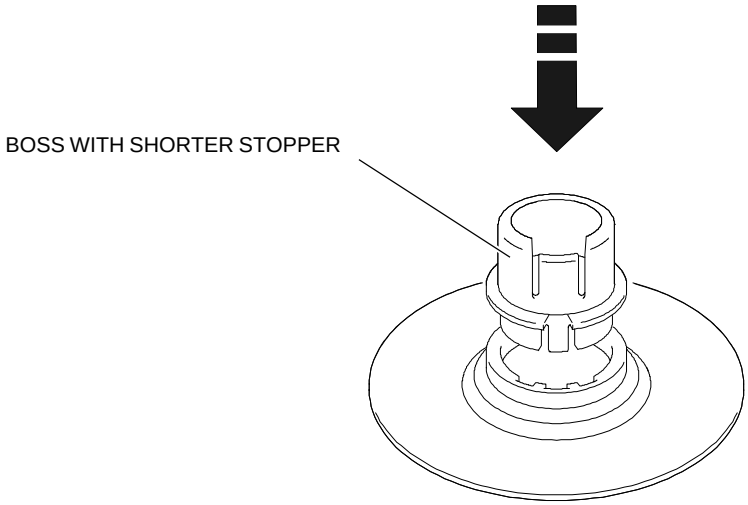


Figure 2-18

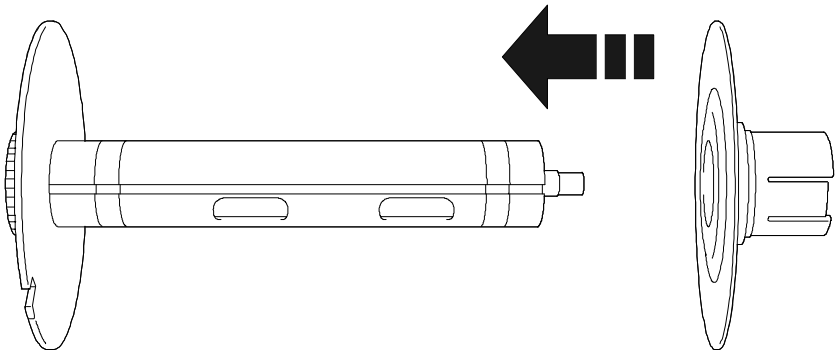


Figure 2-19

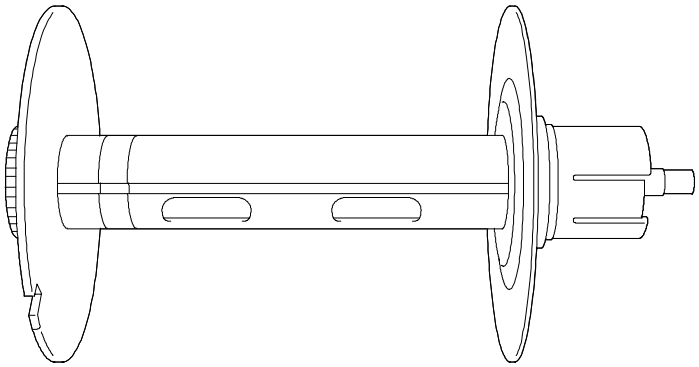


Figure 2-20

2.5.4 Inserting the Rewinder for a 139.7 mm Roll

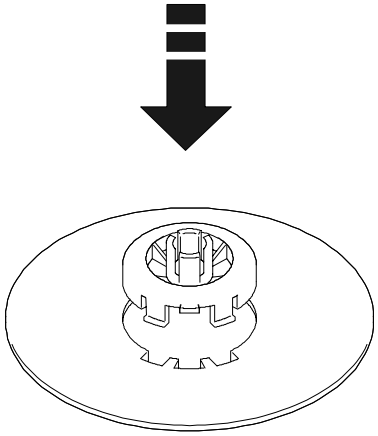


Figure 2-21

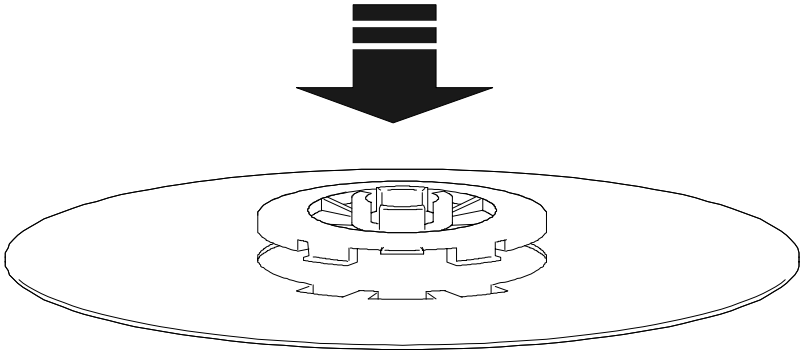


Figure 2-22

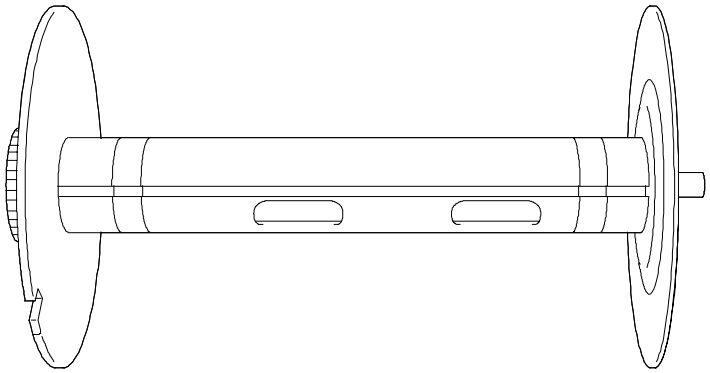


Figure 2-23

2.5.5 Installing the Paper Guide

The paper guide must be installed when using 114.3 mm, 82.5 mm and 76.2 mm paper rolls. To install the paper guide for a 114.3 mm paper roll you need to remove the wider tab (see Figure 2-25). In the case of 82.5 and 76.2 mm paper rolls, detach both tabs.

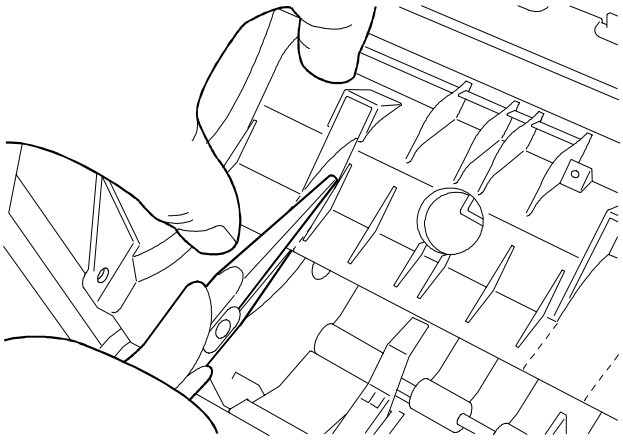


Figure 2-24

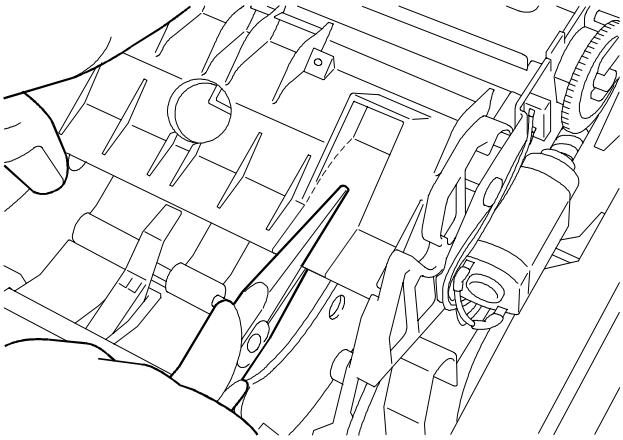


Figure 2-25

View of the paper guide tab spring which must be secured to the right-hand side of the machine.

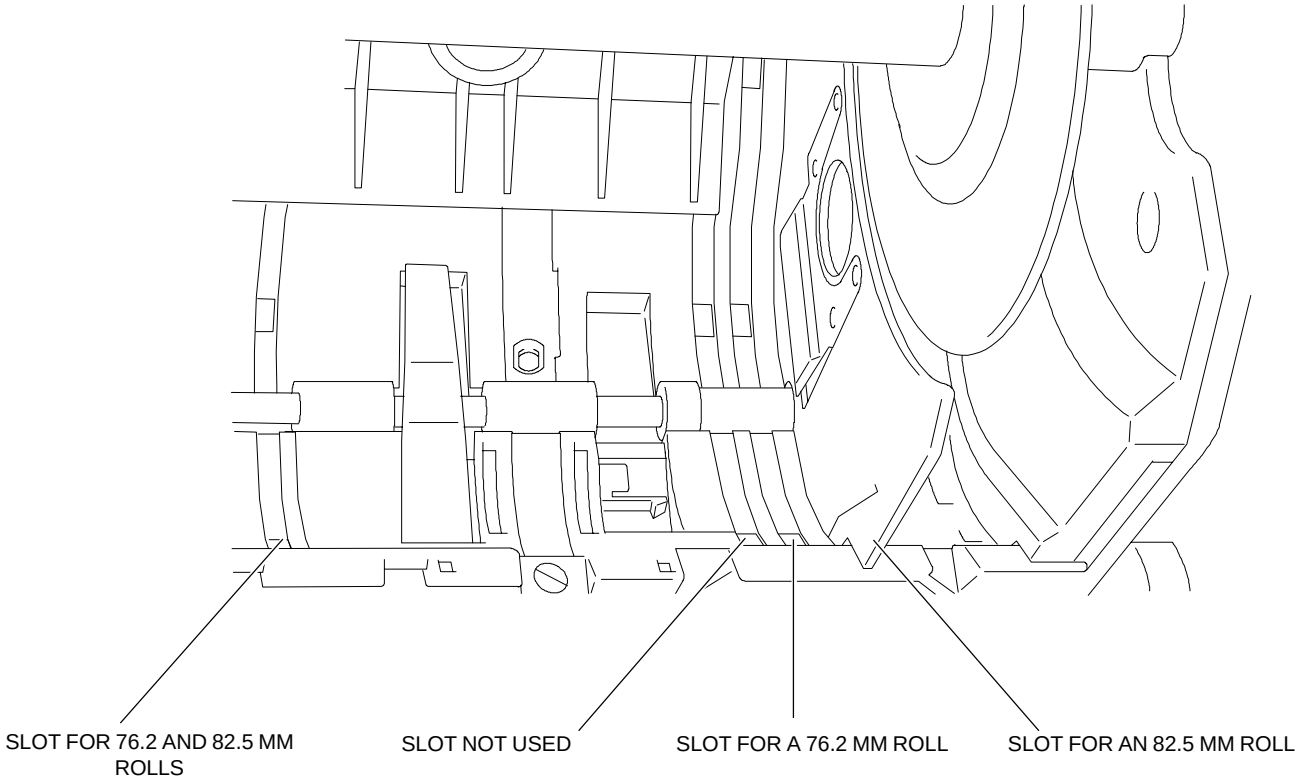


Figure 2-26

2.5.6 Writing Position

Ensure that the ribbon is completely positioned in the ribbon guide as shown in the figure.

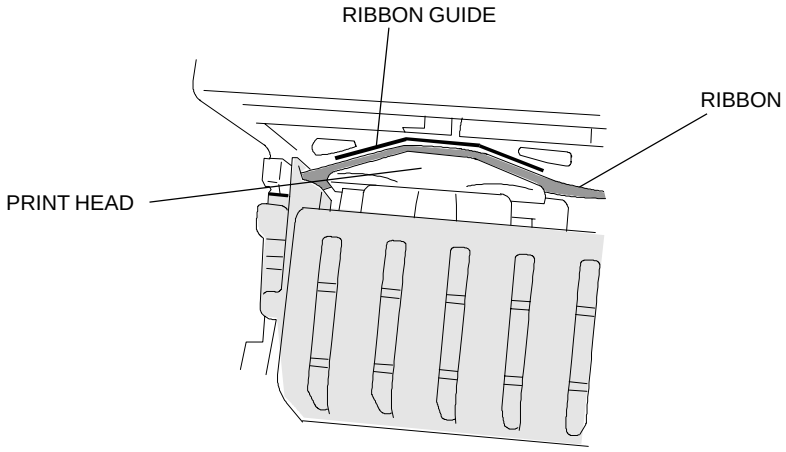


Figure 2-27

■

3. FUNCTIONAL CHECKS

3.1 LEDS

There are five LEDs on the console indicating, respectively:

LED 1 - ON **When on**, indicates that the printer is powered.

LED 2 - error **When on**, indicates that the printer crashed.

When flashing, indicates a mechanical error or a paper jam.

(*****)

LED 3 **When on**, (EPSON emulation)

When flashing, (OLIVETTI emulation)

indicates an almost out of receipt roll condition (when 50 to 150 mm of paper is still available, depending on the adjustment made).

LED 4 **When on**, indicates an almost out of journal roll condition (when 50 to 150 mm of paper is still available, depending on the adjustment made).

LED 5 **When on**, indicates that a form is inserted (from the top or from the front feeder).

When flashing, indicates that the printer is waiting for a form to be inserted from the front insertion slot.

■

(*****) Also see the section entitled *Console Indications*, which explains the error conditions signaled by the LEDs (errors or malfunctions) and gives the appropriate corrective actions.

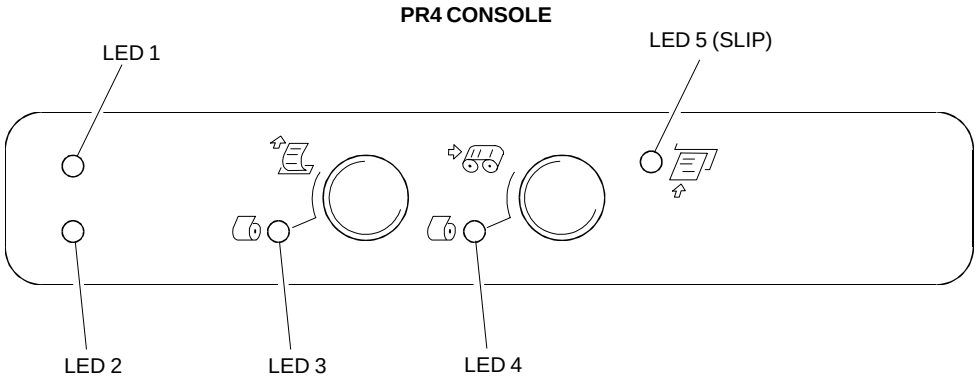


Figure 3-1

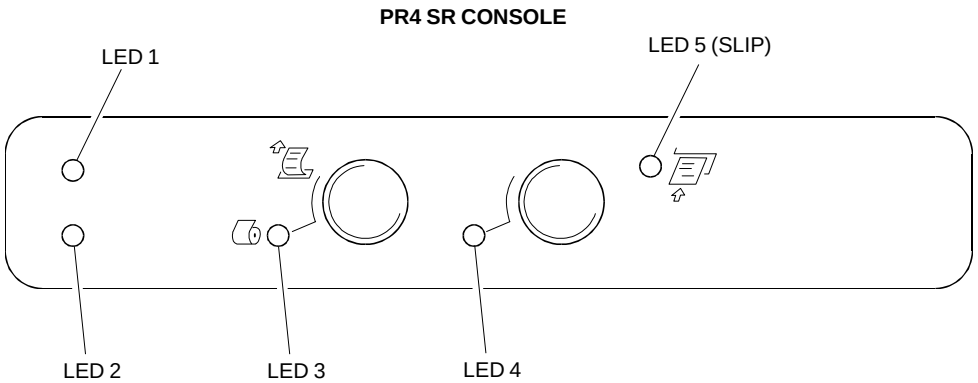


Figure 3-2

Each LED on the console can indicate a condition in any one of the following ways:

○ off ● on ☼ flashing

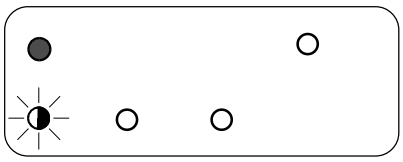
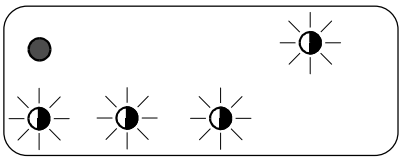
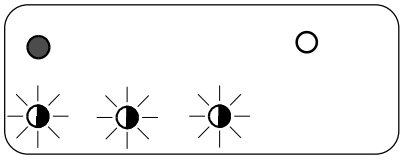
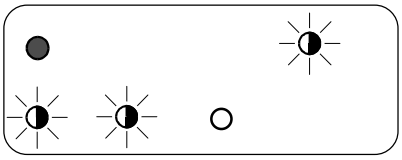
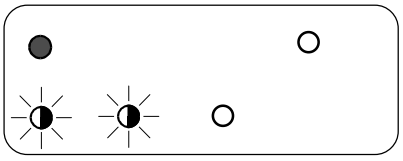
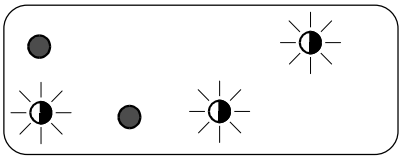
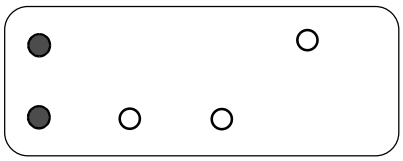
The way in which the five LEDs come on indicates the different failures (errors or malfunctions).

3.2 CONSOLE INDICATIONS

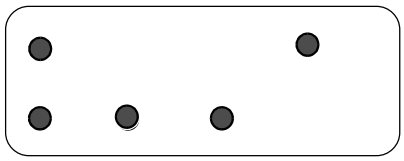
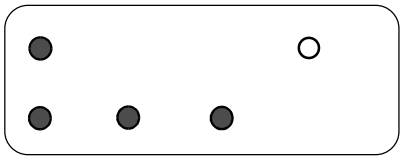
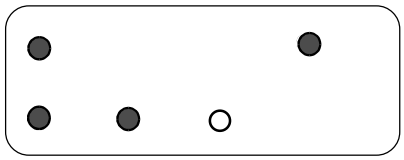
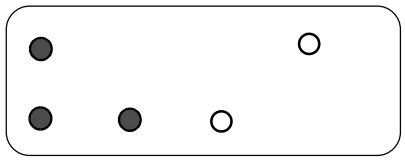
Different failures (errors or malfunctions) are signaled on the console in the following ways:

- Error LED (LED 2) flashing
- Error LED (LED 2) flashing + other LEDs on
- Error LED (LED 2) on.

The following table summarizes all the possible LED indications:

Ref.	LED Indications on the Console	Failure Signaled	Corrective Action
1		a) Paper jam in the Slip path b) Carriage blocked during reset c) Faulty cutter d) Hot print head	Remove the paper Make sure that the carriage slides freely Make sure that there is paper in the cutter Wait for the head to cool down
2		Printer covers open	Close the covers
3		Incorrect read from EPROM of the initial SETUP values	Press any key to load the default values and readjust
4		Incorrect read from EPROM of the photosensor adjustment parameters	Readjust the photosensors
5		Incorrect read from EPROM of the carriage position adjustment value	Readjust the position of the carriage
6		Incorrect read from EPROM of the MICR reader adjustment value	Readjust the MICR
7		Follow the table shown on the following page	

For a detailed description of Ref. 7, **press any key** and the LEDs will assume one of the following configurations:

Ref.	LED Indications on the Console	Failure Signaled	Corrective Action
1		ROM test error	Replace the electronic board
2		RAM test error	Replace the electronic board
3		Faulty MICR	See the related section
4		EPROM access failure	Replace the electronic board (basic)

3.3 SLIP TEST

Activating this procedure makes it possible to check the efficiency of the slip alignment assembly.

Operator action:

Activate the slip test mode as described in Secton 4.

Printer action:

1. Mechanical reset

2. Waits for slip insertion

Operator action:

Insert the slips successively and check alignment.

3.4 ROLL TEST

Activating this procedure makes it possible to check the efficiency of the roll assembly.

Operator action:

Activate the roll test mode as described in Section 4.

Printer action:

PR4: Continuous printing on receipt and journal.

PR4 SR: Continuous printing on receipt

Note: This cycle lasts approximately two hours for the receipt, four hours for the journal.

These cycles are used at the factory during the run-in phase.

To interrupt the cycle open the front cover.

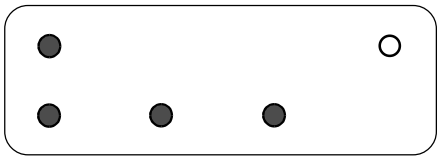
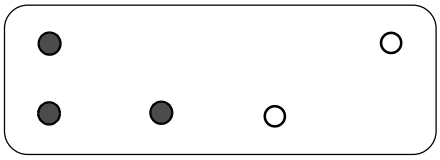
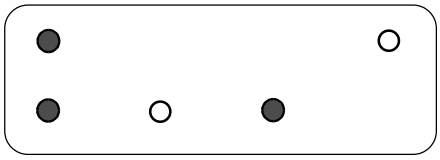
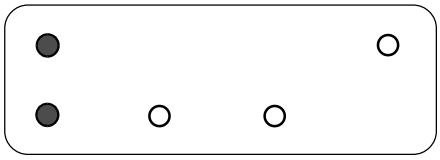
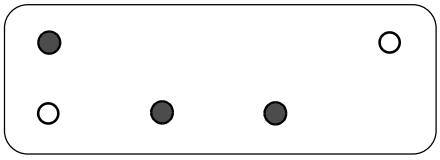
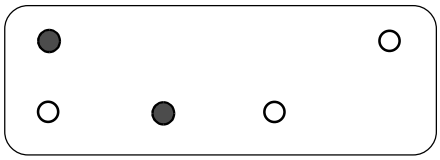
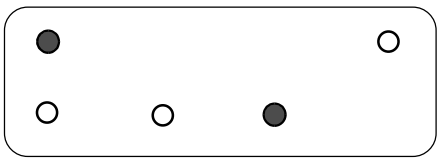
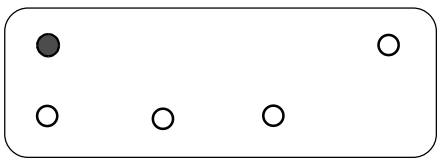
■

4. SETUP AND ADJUSTMENTS

Proceed as follows to setup and/or adjust the printer:

- Open the printer's front cover.
- Press keys 1 and 2 simultaneously for more than five seconds until an acoustic signal is sounded: when releasing these two keys LEDs 2 (error), 3 and 4 will come on.
- Press keys 1 and 2 simultaneously again, this time for more than 10 seconds until another acoustic signal is sounded.
- Press key 1 one or more times until obtaining the light pattern corresponding to the operation to be carried out (refer to the table below indicating the correspondence between the light pattern and the operations to be carried out). Press key 2 to return to the initial state (reset) if needed.
- Close the printer's top cover: the operation to be carried out is performed or set.

The following table shows the LED patterns corresponding to the setup/adjustment operations to be carried out:

Ref.	LED Indications on the Console	Setup/Adjustment Operation Set
1		Initial state (Setup/adjustment mode)
2		Operator test
3		Printer setup
4		Entrance into the Adjustment Menu
5		Auto read Micr
6		Slip test
7		Hexdump
8		Roll test

4.1 OPERATOR TEST

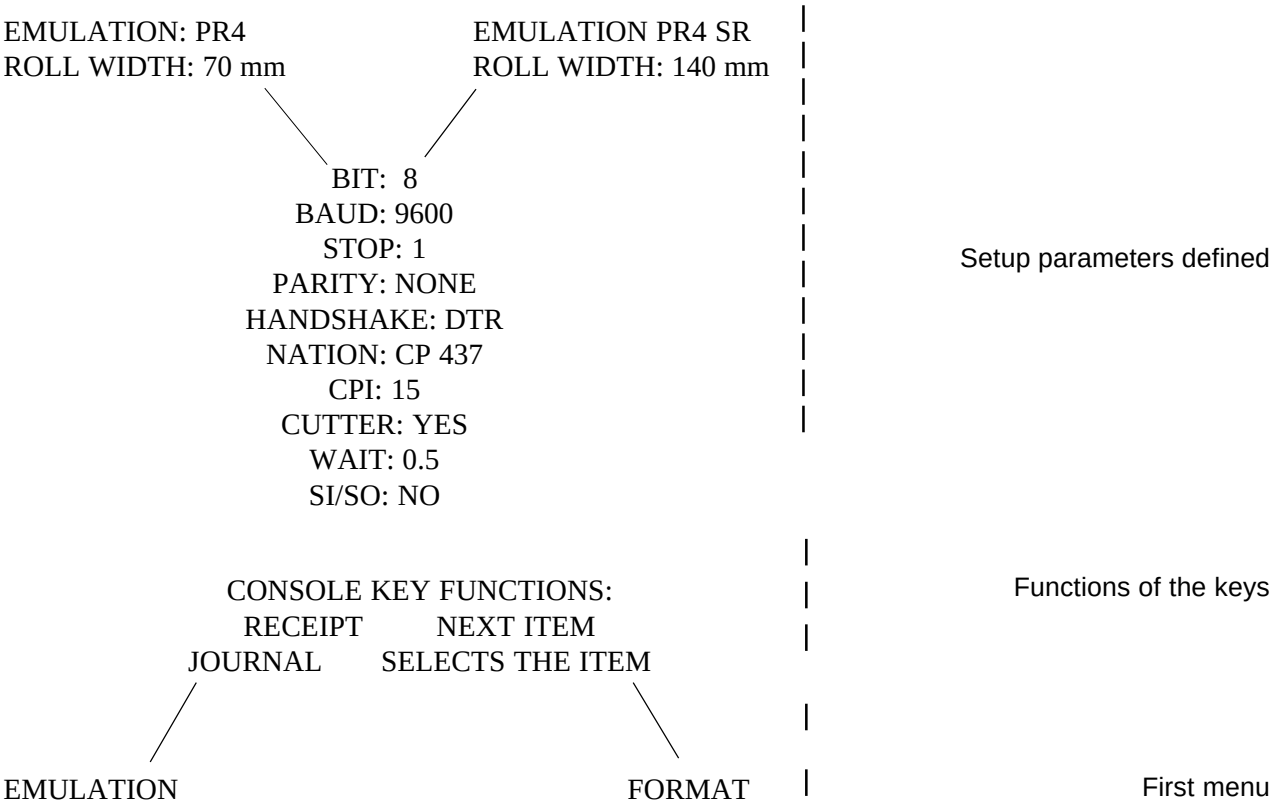
If the printer's front cover is closed with an operator test LED configuration, the printer firmware release, the setup parameters defined and the character set defined are printed on the receipt roll.

4.2 SETUP FROM THE CONSOLE

4.2.1 Accessing this Setup Mode

The procedure to follow for accessing this Setup is explained in the section *Setup and Adjustments* and informs how to obtain the LED configuration for setup.

If the printer's front cover is closed (with the **Setup LED** configuration) the defined setup parameters, the **functions of the keys** in this mode and the title of the first five menus will be printed as shown in the example below:



See also the following sections:

- *Selectable Parameters*
- *Selecting the Parameters*

4.2.2 Selecting the Parameters

After accessing Setup as explained in the section *Accessing Setup* (Section 4.2.1), the machine will print the first main menu.

The following two alternatives are available:

1. Pressing key 2 - JOURNAL (select the menu), the machine will print the first parameter of this menu.

2. Pressing key 1 - RECEIPT (do not select the menu), the machine will print the second main menu.

If you proceed with step 1, the following two alternatives are available:

a. Pressing key 2 - JOURNAL , the machine will print the second main menu.

b. Pressing key 1 - RECEIPT, the machine will print the successive parameter.

..... and so on.

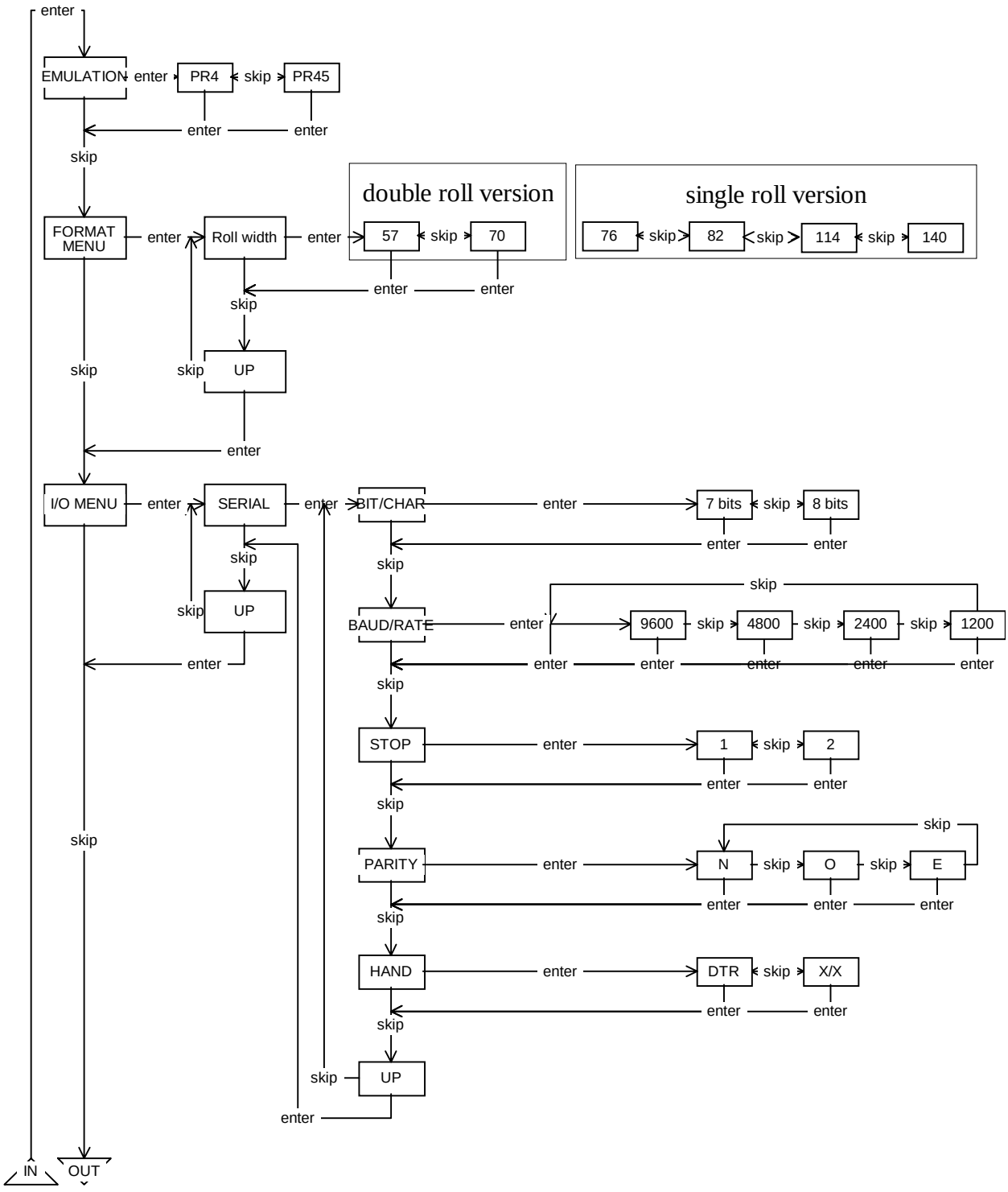
In brief:

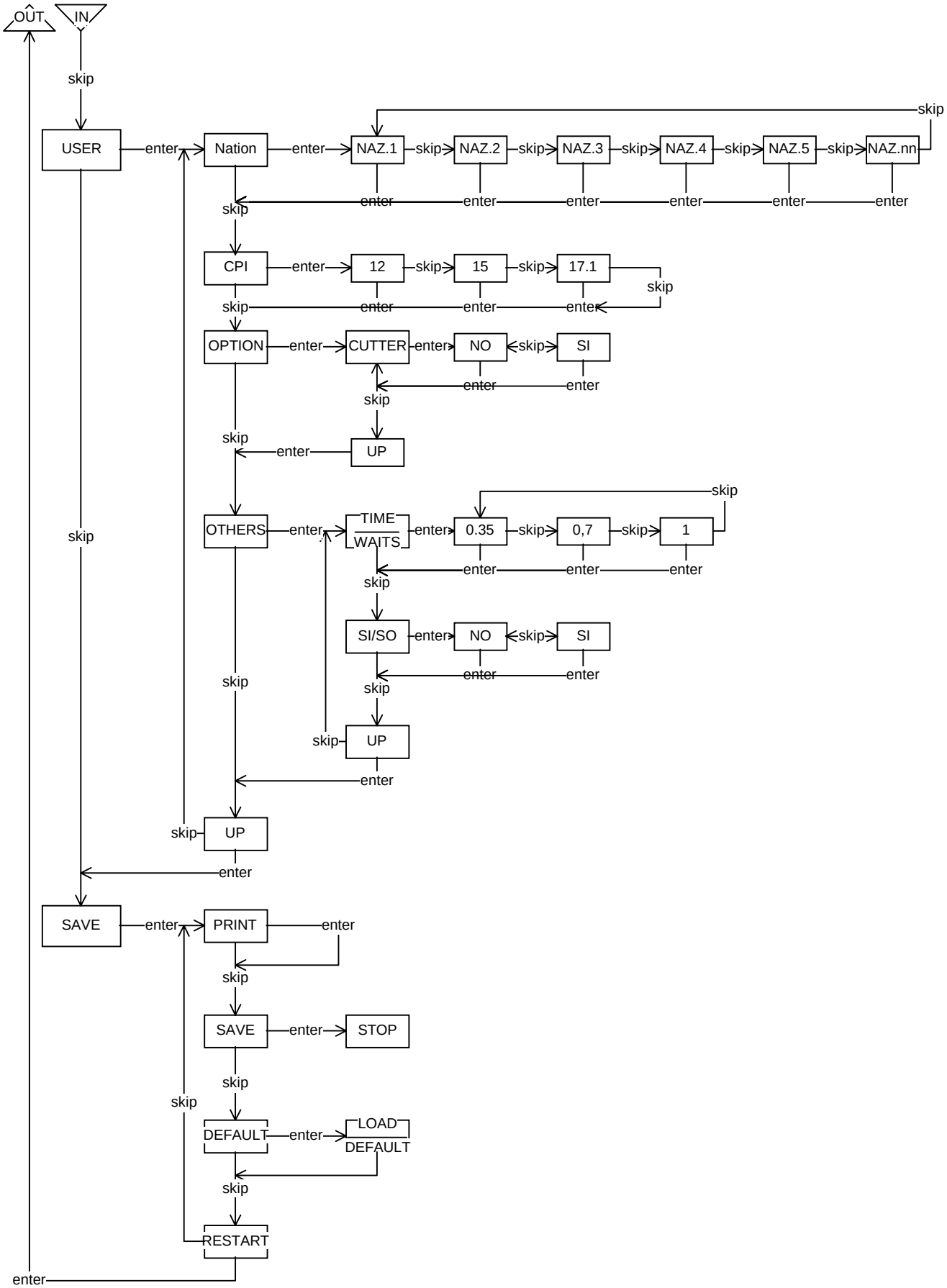
1. In the Setup mode, the machine will print and propose one item or parameter at a time.

2. The item or parameter can be accepted and selected with key 2 - JOURNAL or rejected with key 1 - RECEIPT.

4.2.3 SET-UP Diagram (Olivetti Emulation)

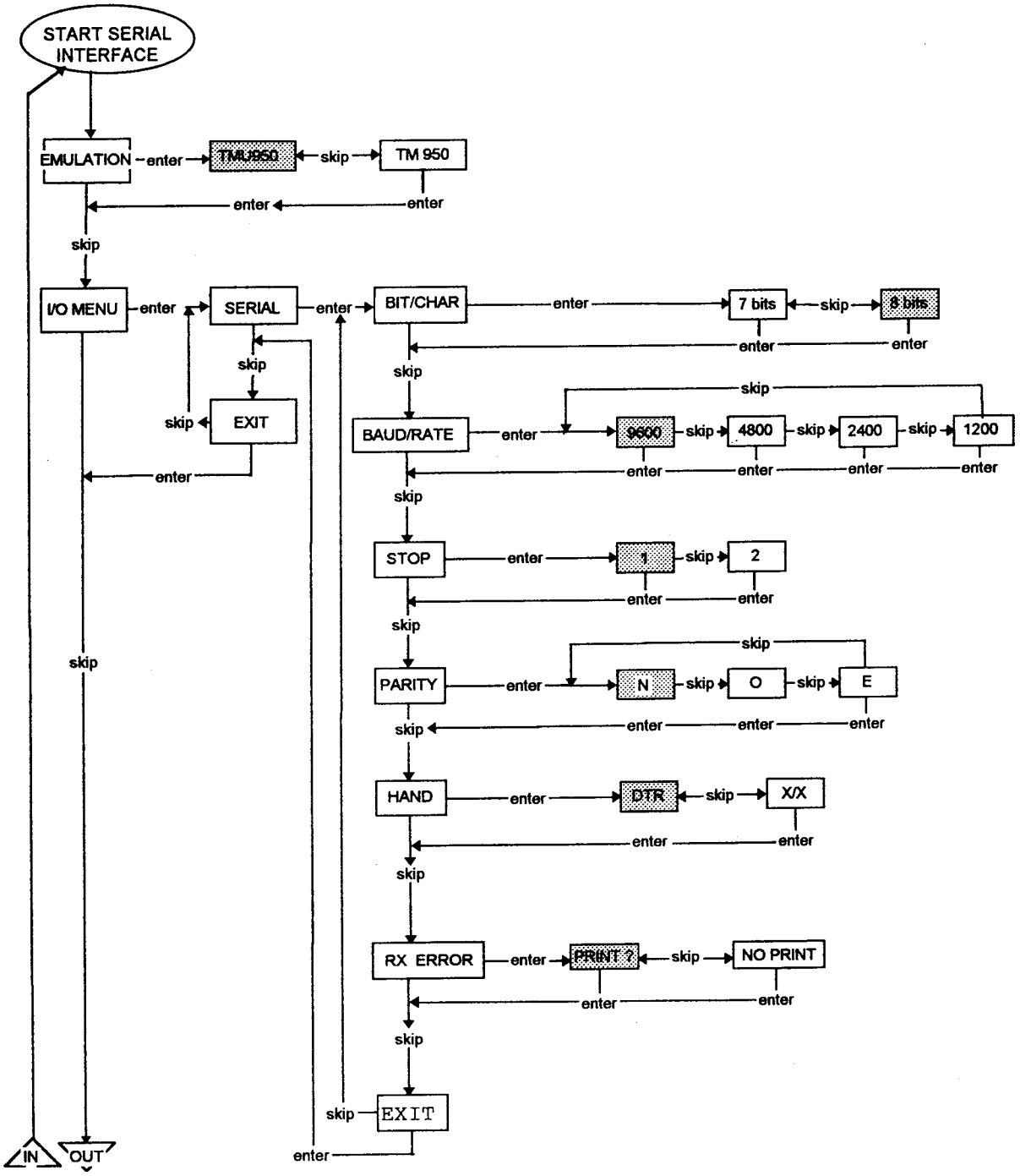
When switching to the SET-UP mode, the printer can be programmed as indicated in the following diagram:

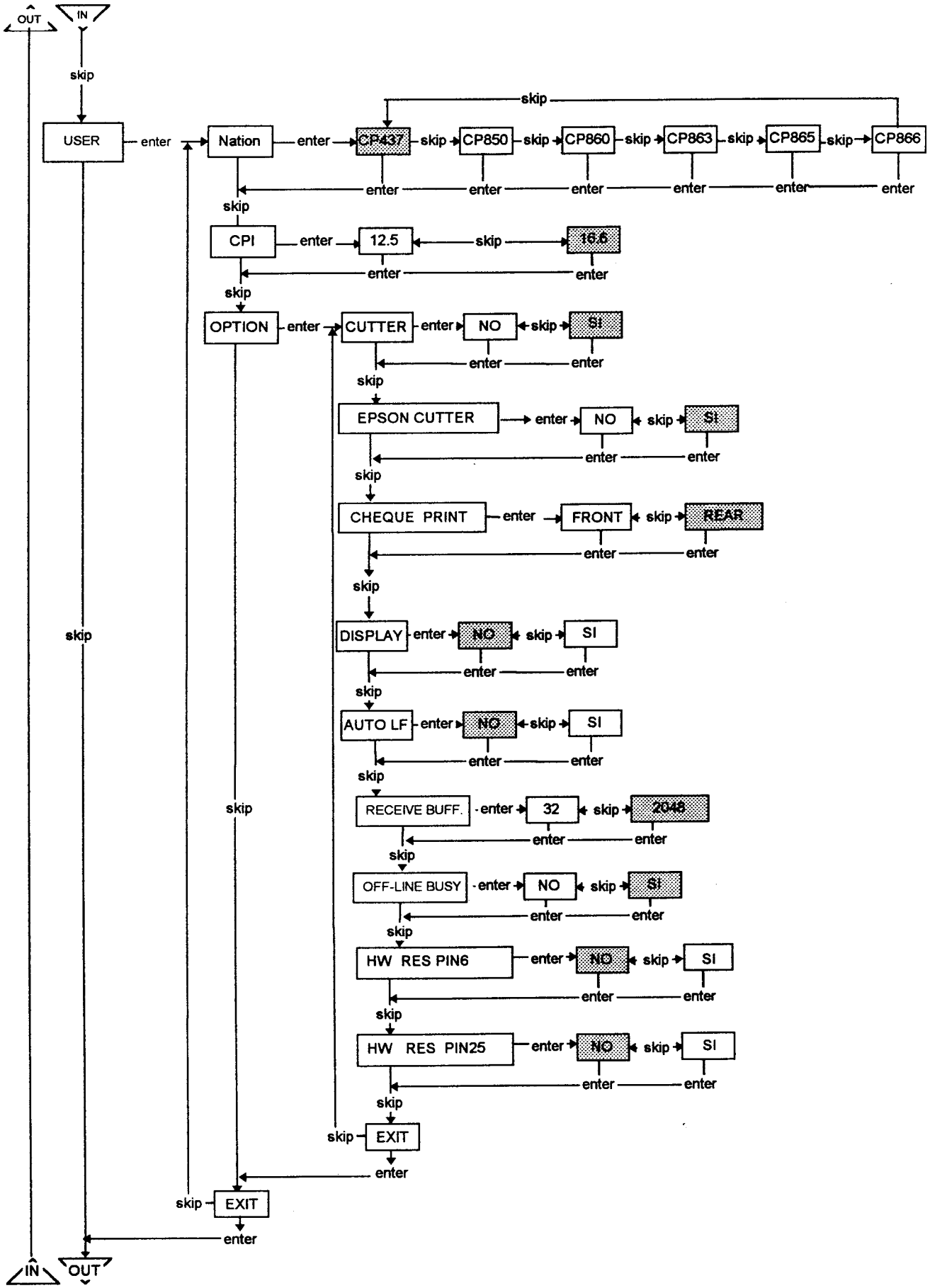


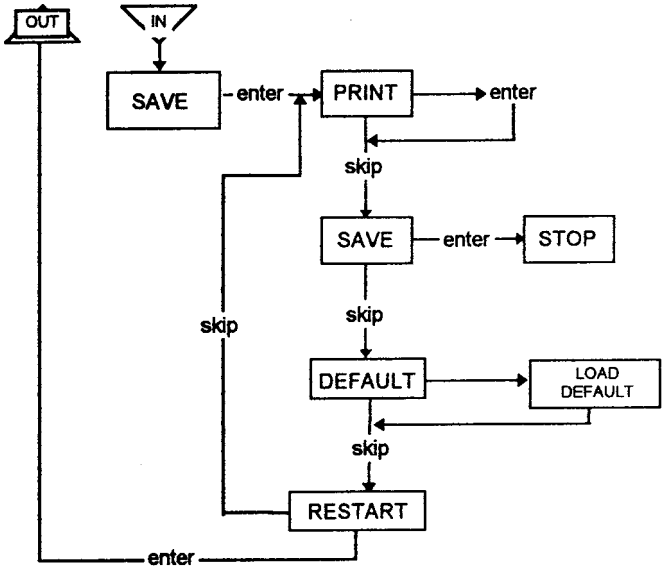

OUT
IN
skip
USER
enter
Nation
enter
NAZ.1
skip
NAZ.2
skip
NAZ.3
skip
NAZ.4
skip
NAZ.5
skip
NAZ.nn
skip
enter
enter
enter
enter
enter
enter
skip
CPI
enter
12
skip
15
skip
17.1
skip
skip
enter
enter
enter
OPTION
enter
CUTTER
enter
NO
skip
SI
enter
enter
skip
skip
enter
UP
skip
OTHERS
enter
TIME
WAITS
enter
0.35
skip
0,7
skip
1
skip
enter
enter
enter
skip
SI/SO
enter
NO
skip
SI
enter
enter
skip
skip
skip
UP
enter
skip
UP
enter
SAVE
enter
PRINT
enter
skip
SAVE
enter
STOP
skip
skip
DEFAULT
enter
LOAD
DEFAULT
skip
RESTART
enter

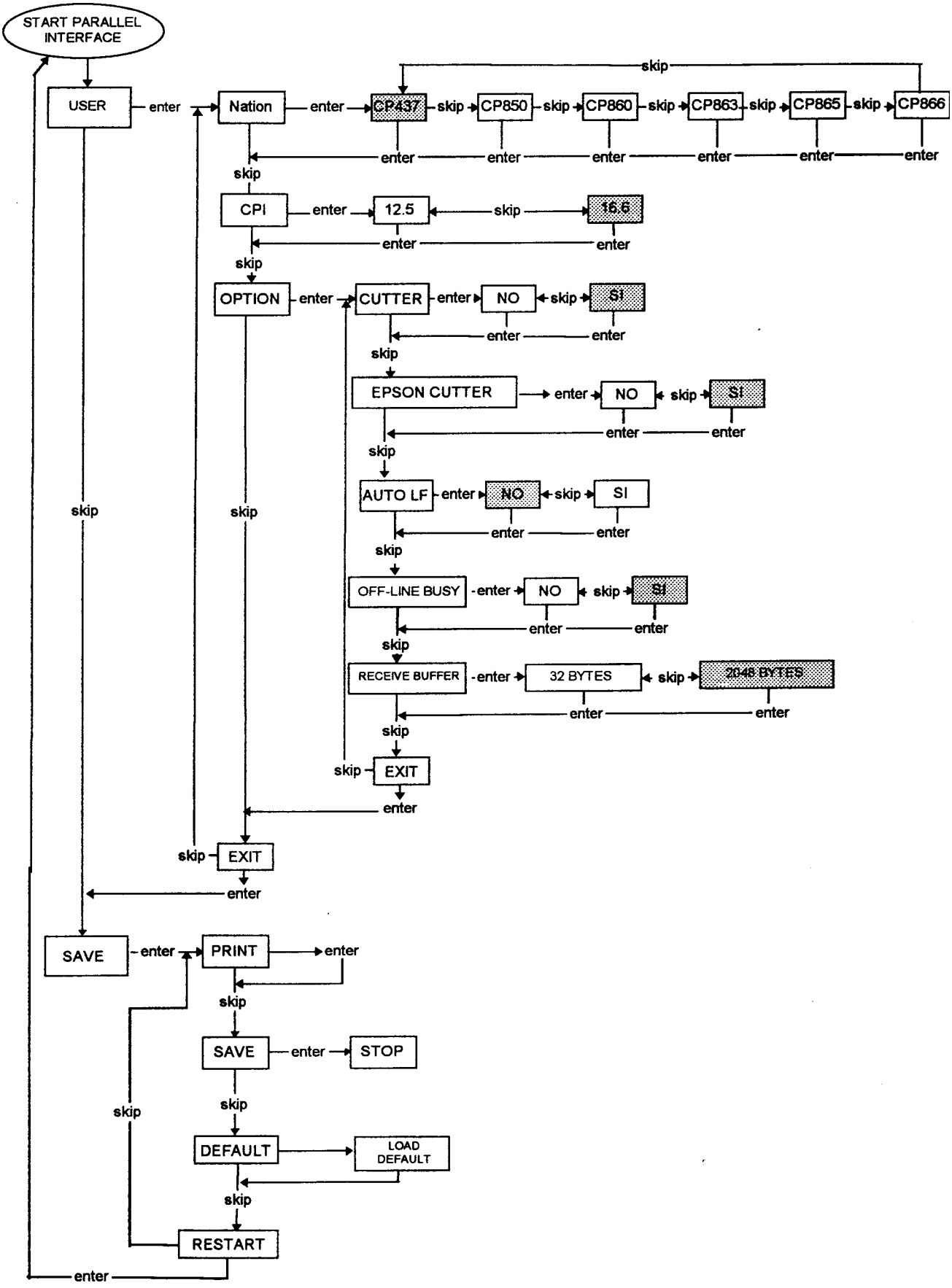
4.2.4 SET-UP Diagram (EPSON Emulation)

With the printer in the Setup mode, select the parameters by following the flow charts provided below.




OUT
IN
skip
USER
enter
Nation
enter
CP437
skip
CP850
skip
CP860
skip
CP863
skip
CP865
skip
CP866
enter
skip
CPI
enter
12.5
skip
16.6
OPTION
enter
CUTTER
NO
SI
EPSON CUTTER
CHEQUE PRINT
FRONT
REAR
DISPLAY
AUTO LF
RECEIVE BUFF.
32
2048
OFF-LINE BUSY
HW RES PIN6
HW RES PIN25
EXIT


OUT
IN
SAVE
enter
PRINT
enter
skip
SAVE
enter
STOP
skip
skip
DEFAULT
LOAD
DEFAULT
skip
RESTART
enter


START PARALLEL INTERFACE
USER
enter
Nation
CP437
CP850
CP860
CP863
CP865
CP866
skip
CPI
12.5
16.6
OPTION
CUTTER
NO
SI
EPSON CUTTER
AUTO LF
OFF-LINE BUSY
RECEIVE BUFFER
32 BYTES
2048 BYTES
EXIT
SAVE
PRINT
STOP
DEFAULT
LOAD DEFAULT
RESTART

■

5. DISASSEMBLY/REASSEMBLY PROCEDURES

5.1 OVERVIEW

This chapter is divided into two parts which describe how to disassemble/reassemble the parts and how to make the related adjustments.

Before proceeding with any operation, power off the printer and unplug it from the electrical outlet.

5.2 REMOVING THE CASE

- Open the front and rear covers completely.
- Remove the ribbon cartridge and then remove the paper rolls by tearing them at their insertion windows.
- Extract the console by gently pushing it upwards.
- Manually remove the Closed cover detection microswitches.

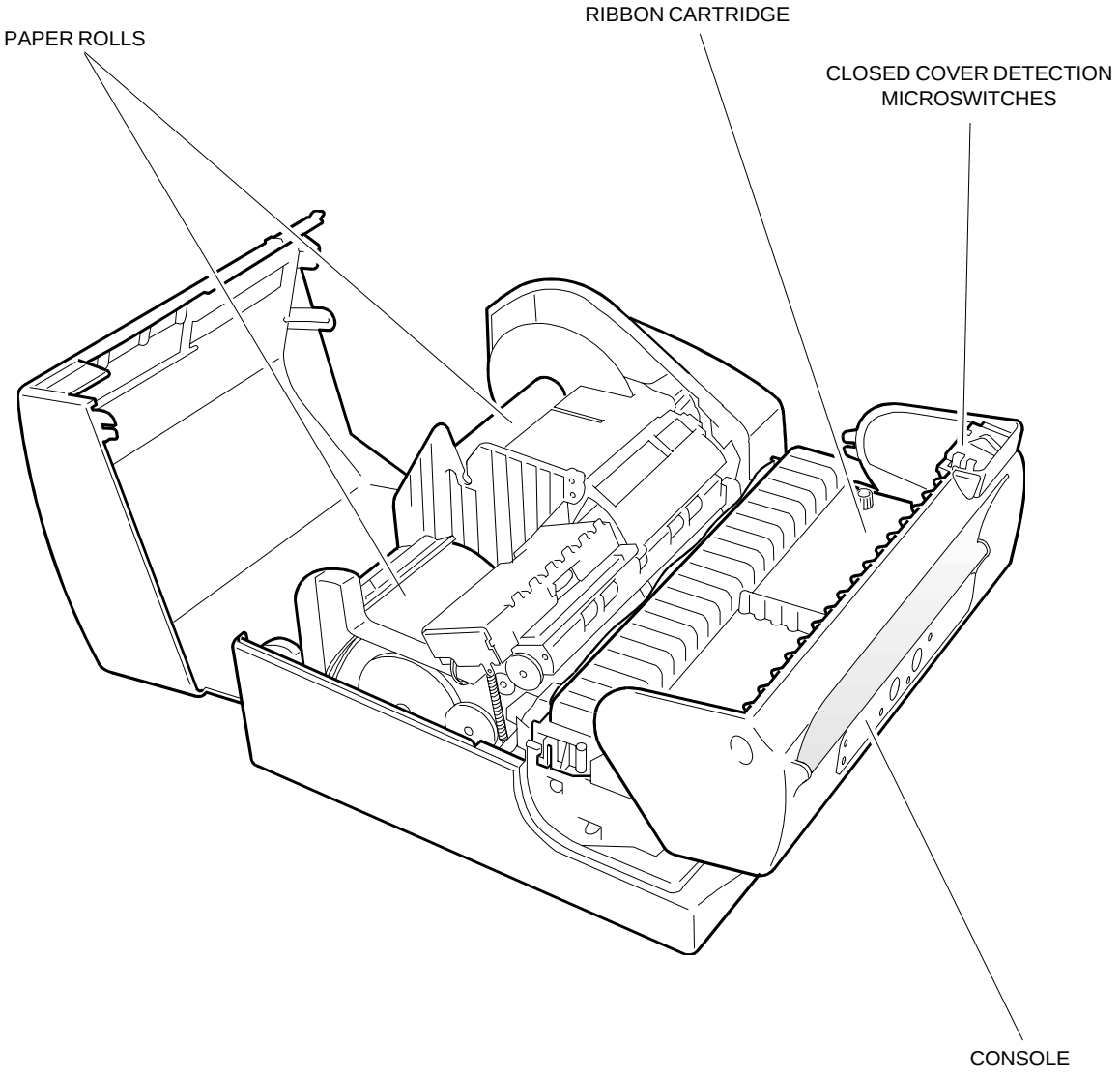


Figure 5-1

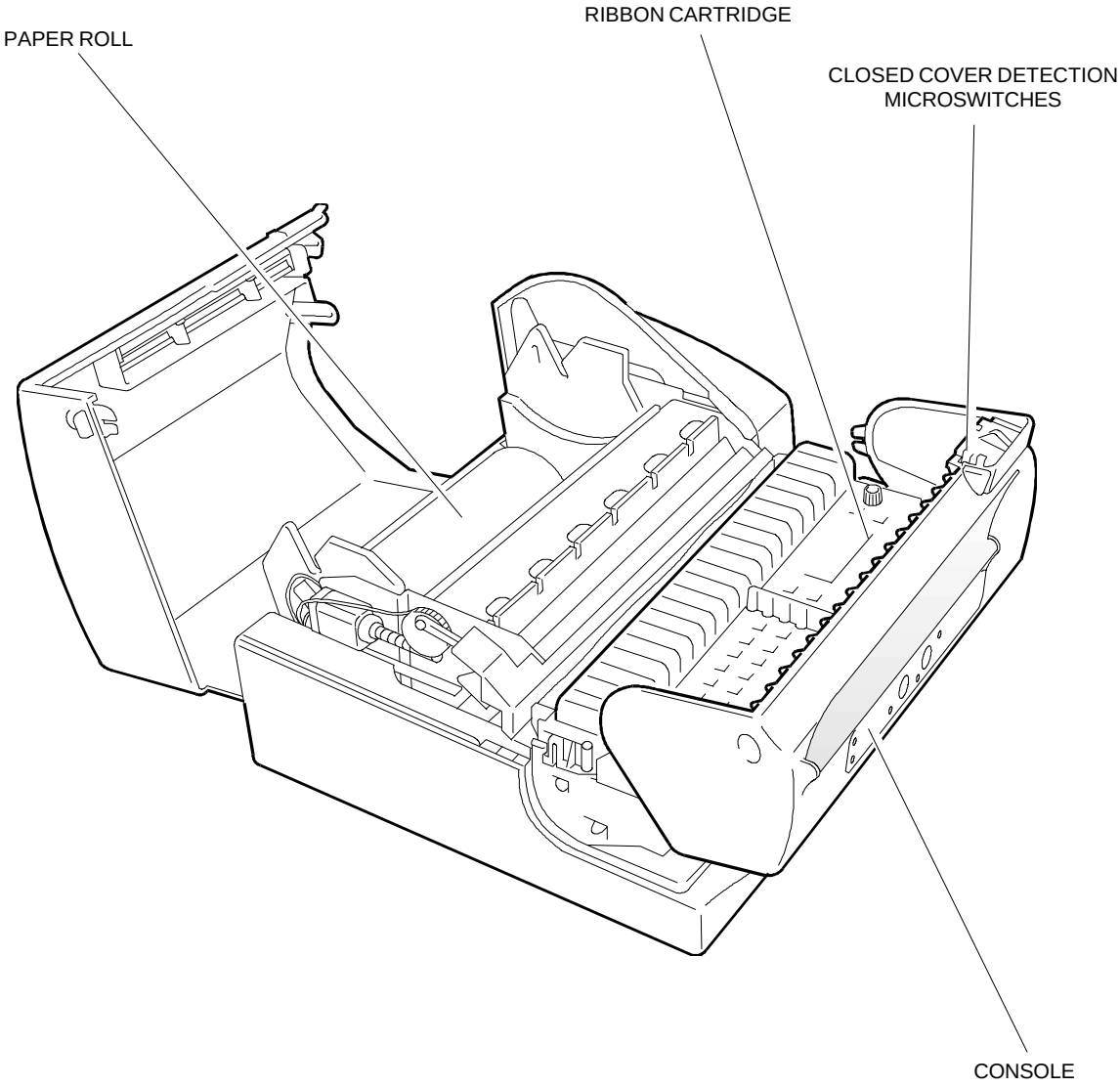

PAPER ROLL
RIBBON CARTRIDGE
CLOSED COVER DETECTION MICROSWITCHES
CONSOLE

Figure 5-2

- Remove the front cover by gently pressing on its two side tabs.
- The cover of the paper rolls can also be removed manually by proceeding as shown in Figures 5-3, 5-4.

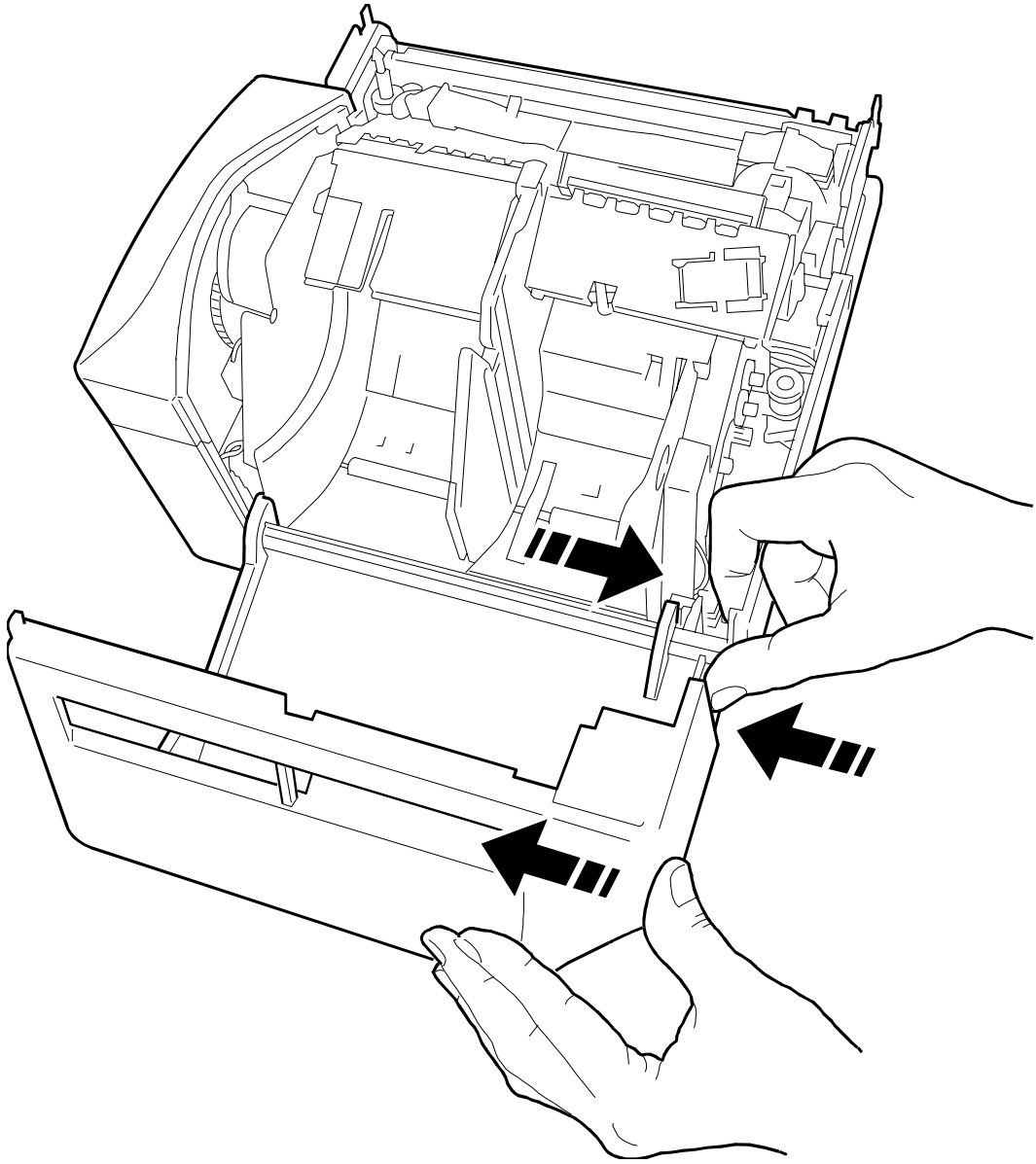


Figure 5-3

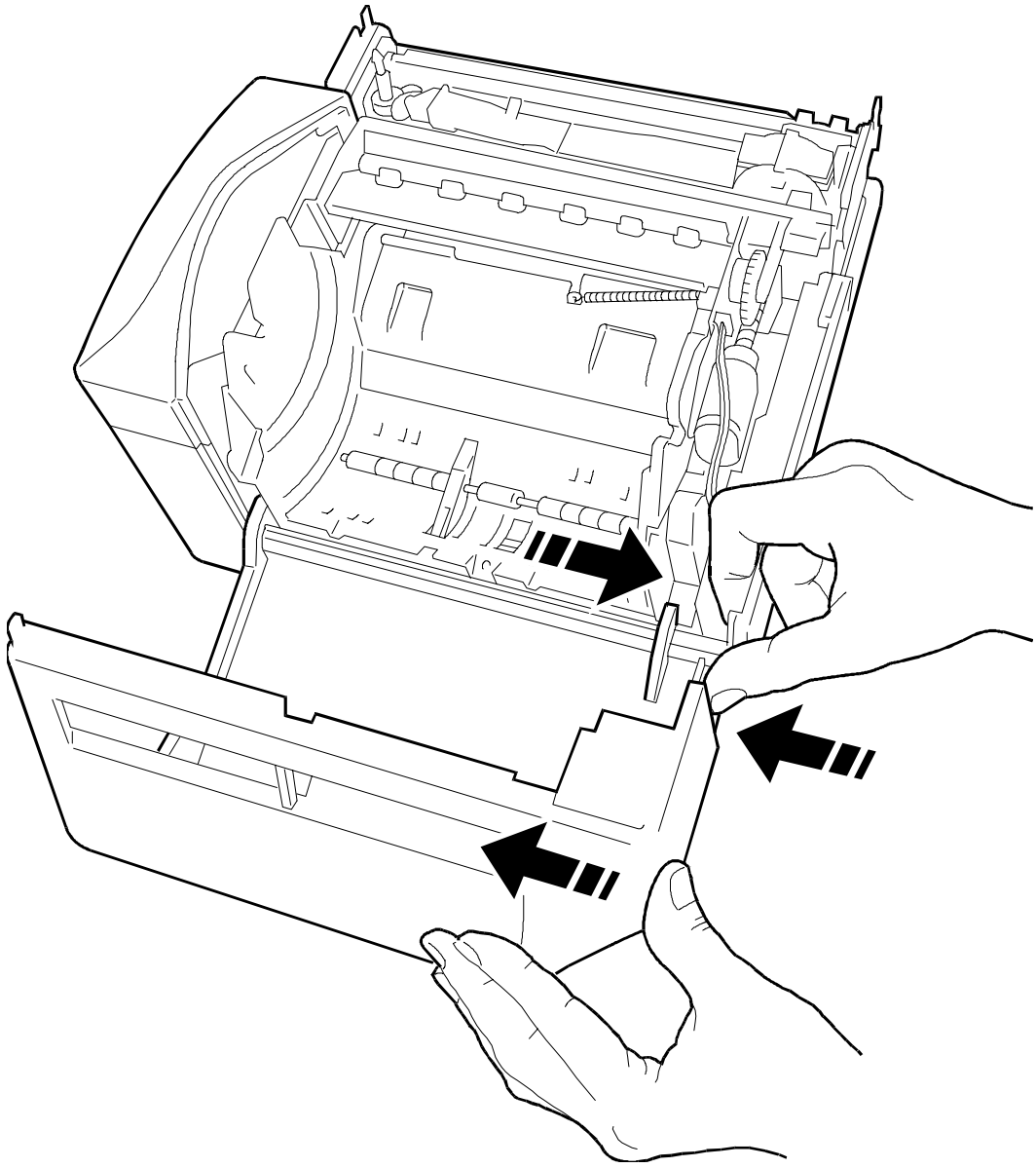


Figure 5-4

- To remove the print assembly from the case, proceed as shown in Figures 5-5, 5-6. The case must be removed from the base by manually sliding it upwards.

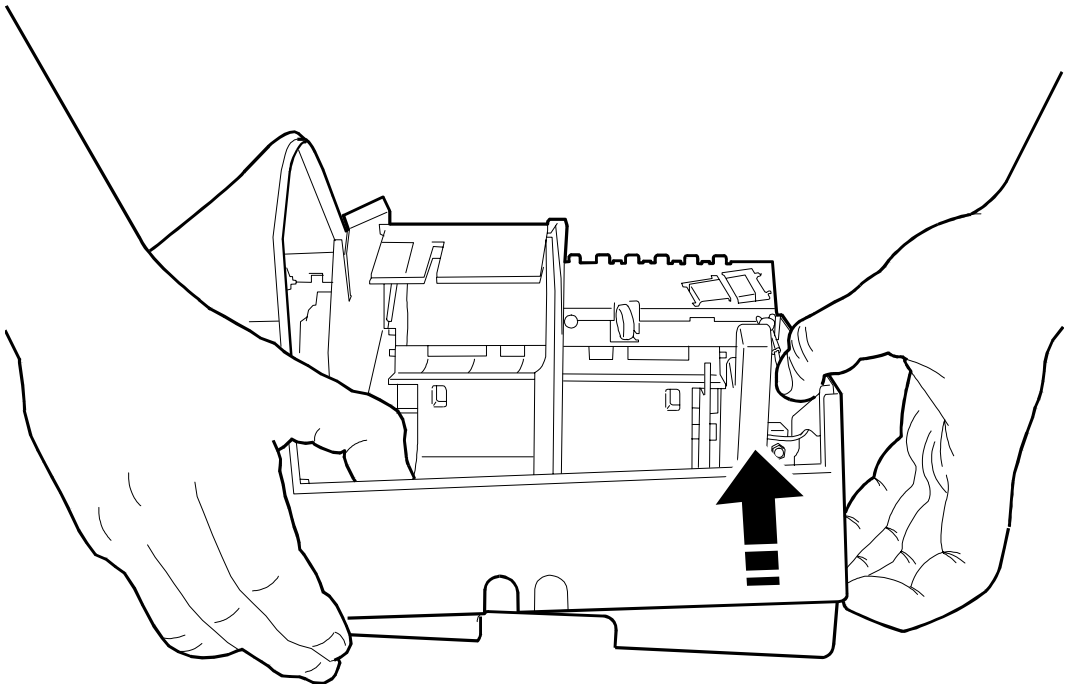


Figure 5-5

PR4 SR

- The arrows indicate the positions of the hooks that secure the frame to the base of the printer.

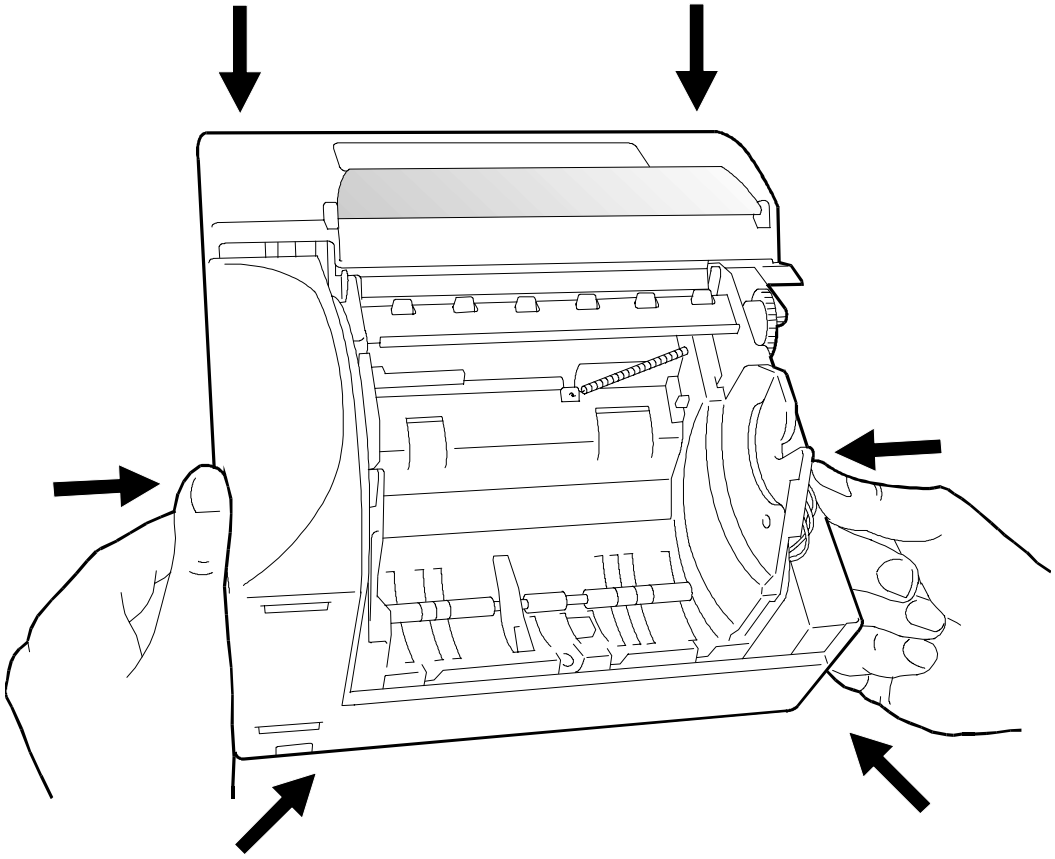
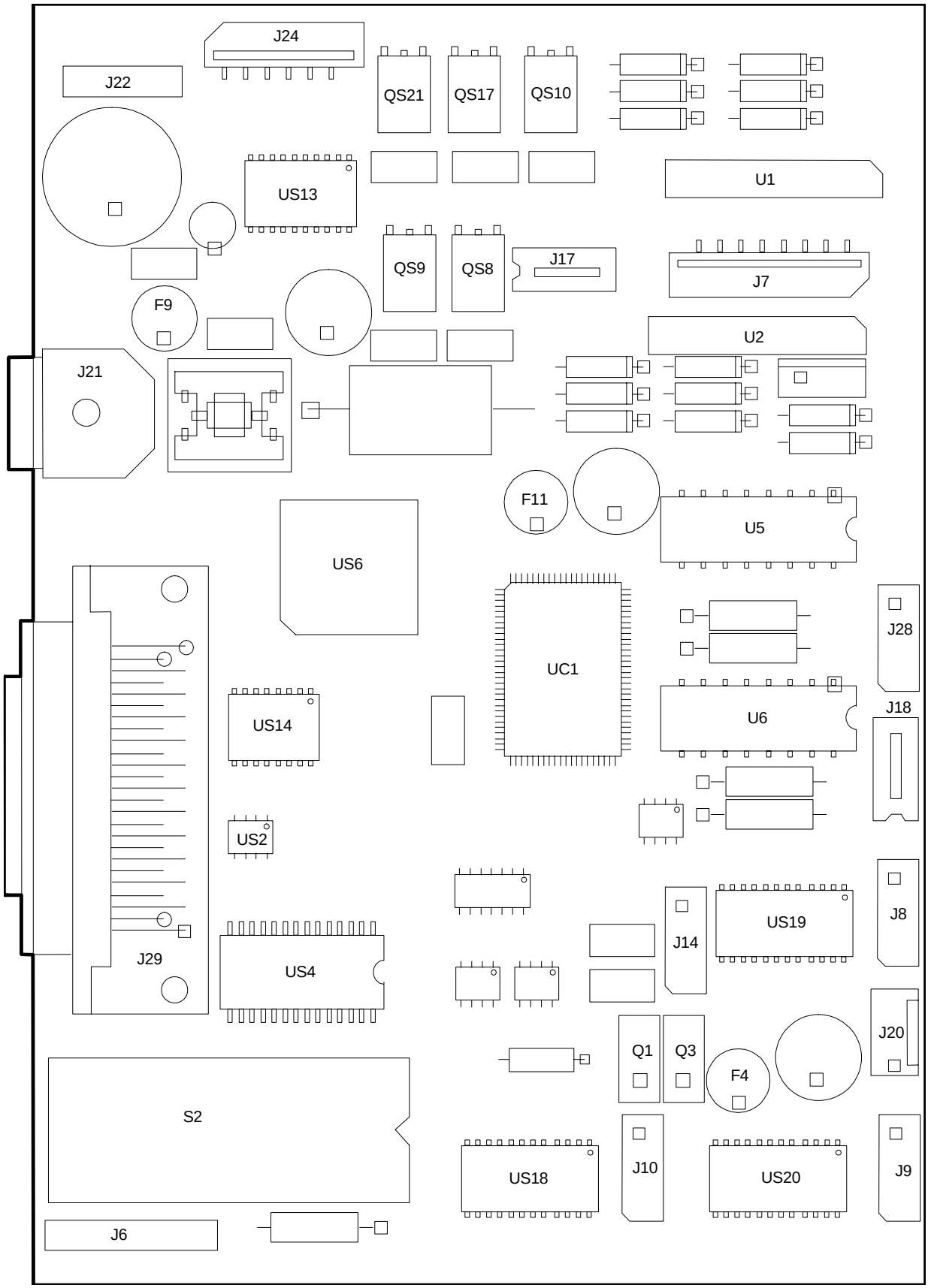


Figure 5-6

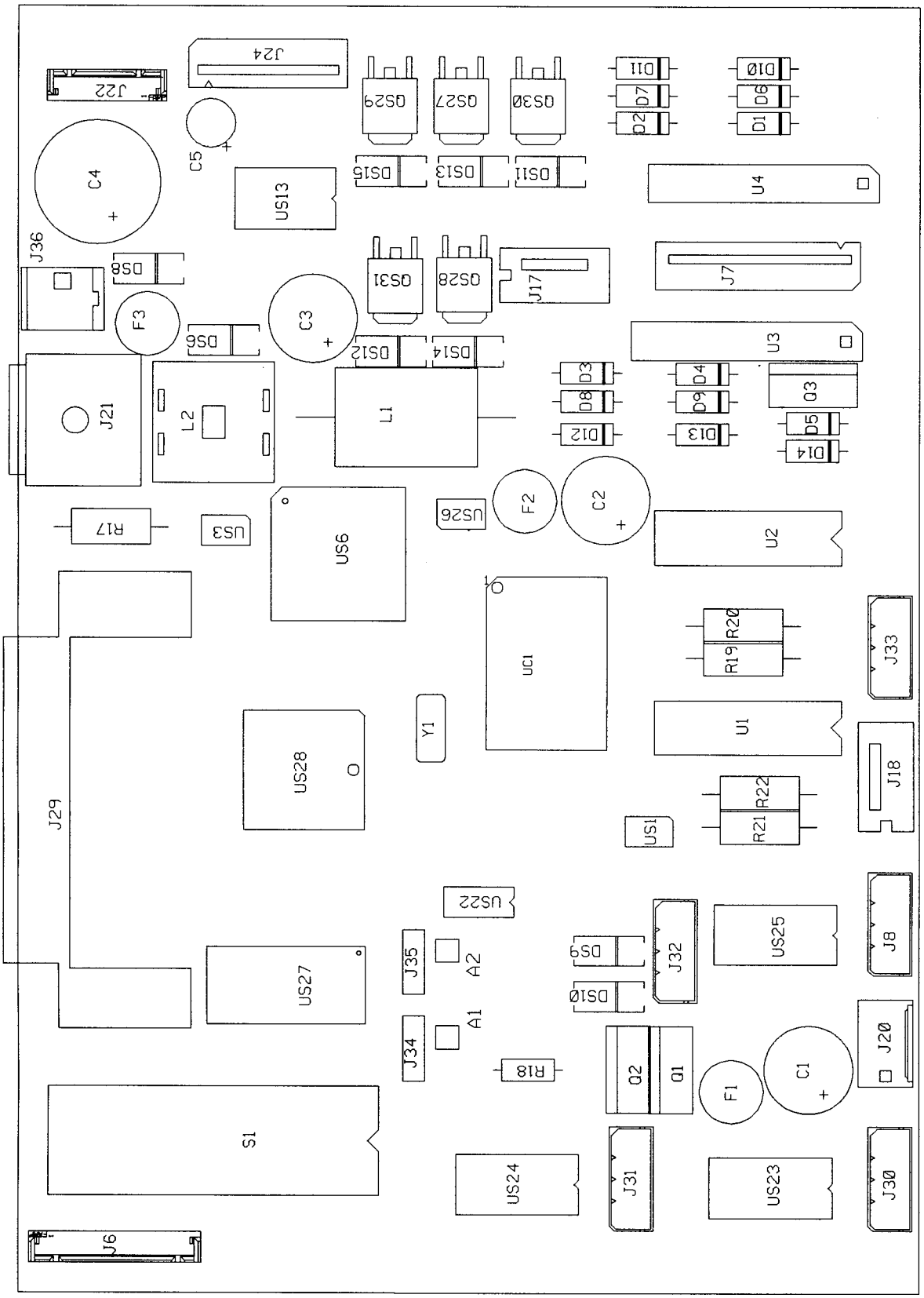
5.3 LOCATING THE COMPONENTS ON THE ELECTRONIC BOARD (SERIAL VERSION)



LEGEND:

Ref.	Description
F4	Fuse for the receipt, journal, slip and cutter motors
F9	Main fuse
F11	Carriage motor fuse
J6	Display/drawer board connector
J7	Needle head connector
J8	Slip motor connector
J9	Receipt motor connector
J10	Journal motor connector
J14	Cutter motor connector
J17	Slip photosensor connector (photo on the right edge of the slot)
J18	Paper photosensor connector (photo between the receipt and journal)
J20	Out of receipt and journal microswitch connector
J21	Power supply connector
J22	MICR board connector
J24	Console connector
J28	Carriage motor connector
J29	RS 232 serial interface connector
Q1, Q3	Cutter motor drivers
QS8, QS9, QS10, QS17, QS21, U1, U2	Needle drivers
S2	EPROM socket
U5,U6	Carriage motor drivers
UC1	ASIC
US2	E2PROM
US4	RAM
US6	CPU
US13	+5V regulator
US14	RS232 serial interface driver
US18	Journal motor driver
US19	Slip motor driver
US20	Receipt motor driver

5.4 LOCATING THE COMPONENTS ON THE ELECTRONIC BOARD (PARALLEL VERSION)



LEGEND:

Ref.	Description
F1, F2	Fuse from 1.6 to 125 V
F3	Fuse from 3.15 to 125 V
J6	Display/cassette card
J7	Needle print head
J8	Slip motor
J17	Slip photosensor (on the right-hand side of the slot)
J18	Paper detection photosensor (receipt and journal)
J20	Receipt and journal out of paper microsensor
J21	Power supply
J22	Micr card
J24	Console
J29	Parallel port
J30	Receipt motor
J31	Journal motor
J32	Cutter motor
J33	Carriage motor

5.5 REMOVING THE PRINT ASSEMBLY

- Remove the case (Section 5.2).
- Remove screws **1** and **2** shown in the figure so as to be able to lift the machine from the base (Fig. 5.9).
- Disconnect the yellow ground cables of the print and cutter assemblies.
- Disconnect all the connectors from the electronic board and separate the machine from the base.
- Remove screws **3** and **4** (Fig. 5.8). Separate the print unit from the paper feed unit by appropriately rotating them (Fig. 5.7).
- To reassemble follow the disassmbly procedures in reverse order giving special consideration to the hooking points shown in the figure (Fig. 5.7).

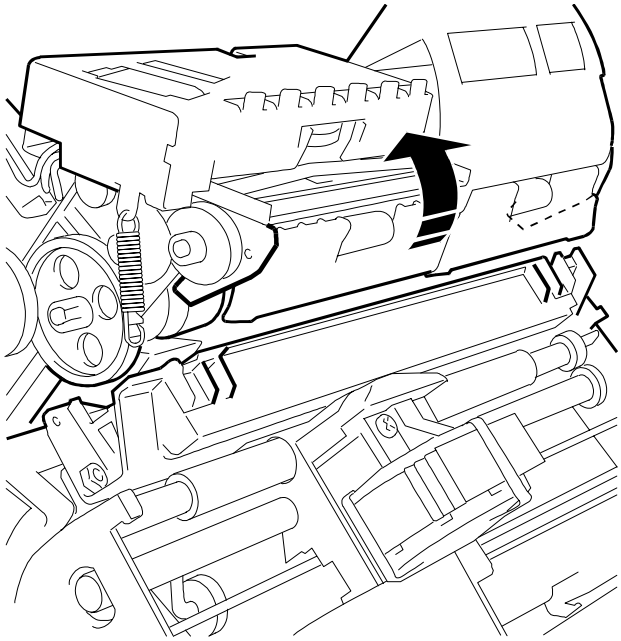


Figure 5-7

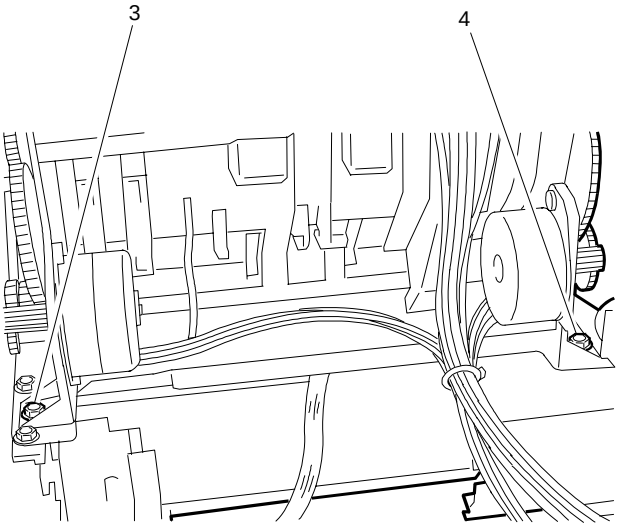


Figure 5-8

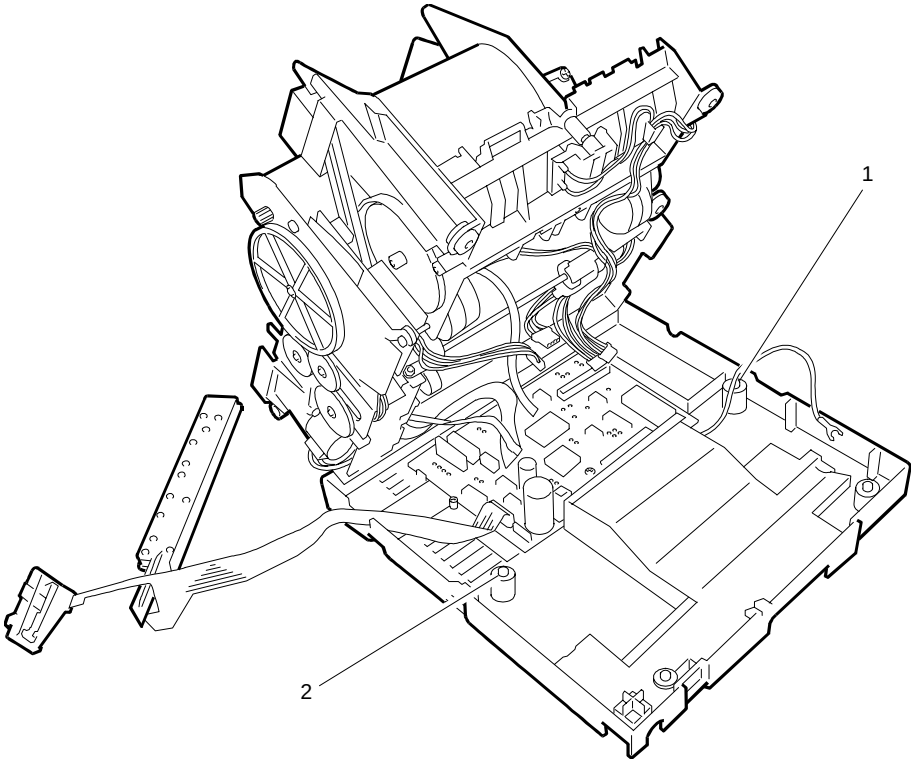


Figure 5-9

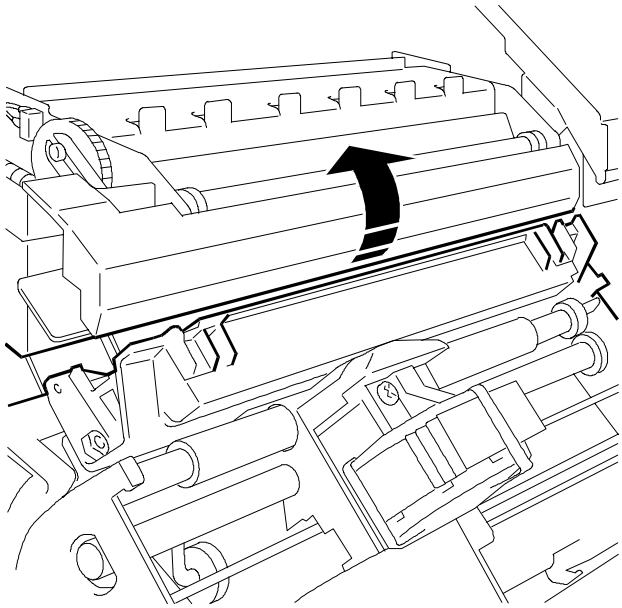


Figure 5-10

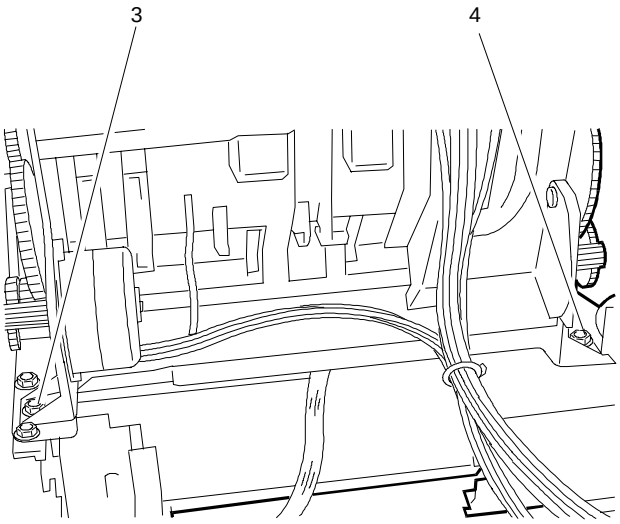


Figure 5-11

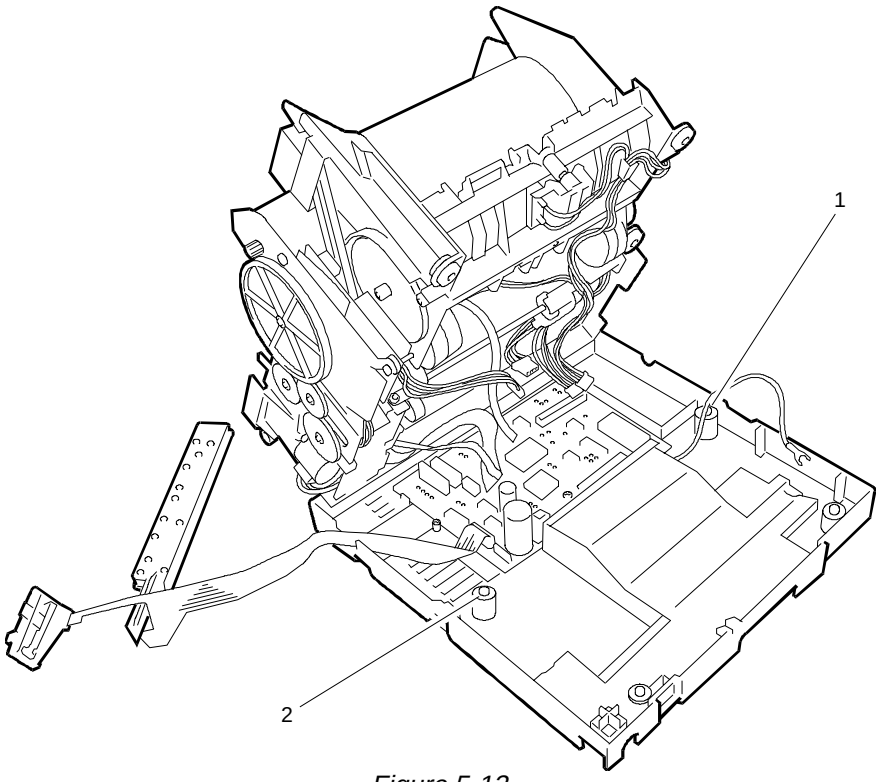


Figure 5-12

5.6 REMOVING THE PRINT HEAD

- Remove the case (Section 5-2).
- Remove screw **1**.
- Remove the two boards to which the power supply flat cable is connected as shown in Figure 5-13.
- Proceed as explained in Section 5.3 to access the electronic board and therefore disconnect the flat cable from connector J7 on this board.
- To completely extract the print head and related flat cable remove the board shown in Figure 5-14; gently bend this board so that it can be removed.
- To reassemble follow the disassembly procedure in reverse order.

Note: After replacing the head readjust the parallelism and the distance between the print head and platen (Section 6.2)

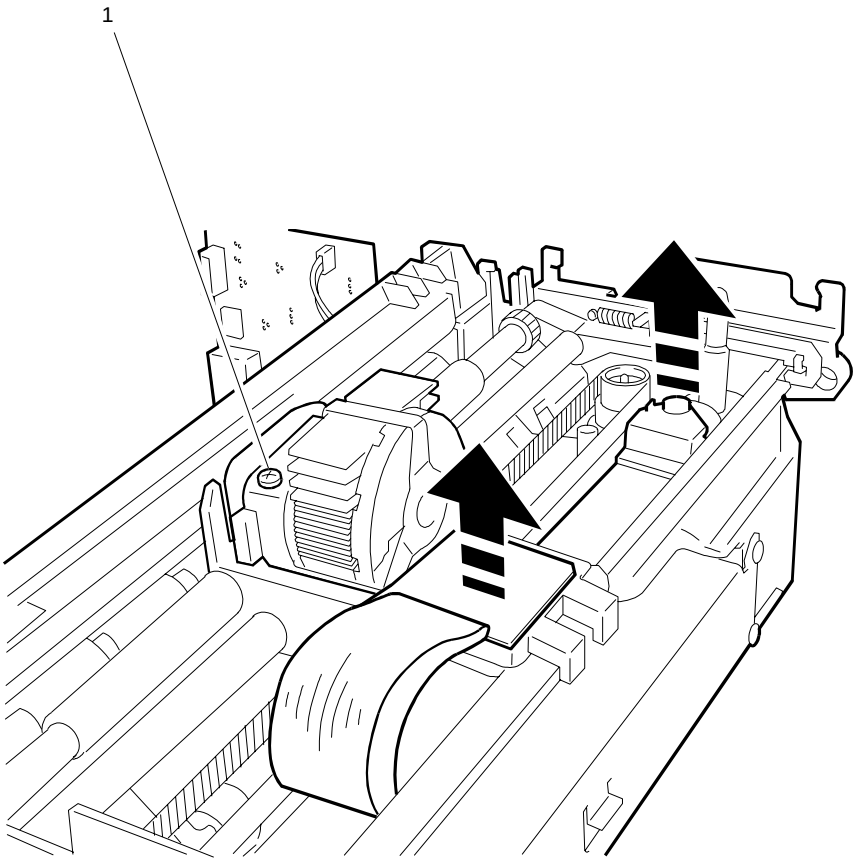


Figure 5-13

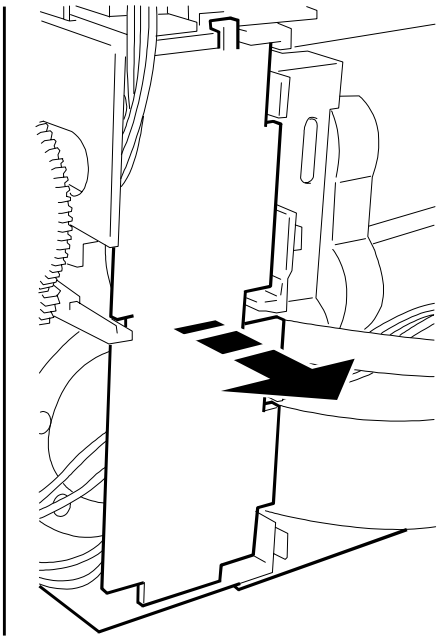


Figure 5-14

5.7 CUTTER ON THE PR4

- Remove the case (Section 5).
- Proceed as explained in Section 5.2 to access the electronic board and then disconnect cutter motor connector J14.
- Release the retension spring.
- Unscrew the retension screw and the ground cable.

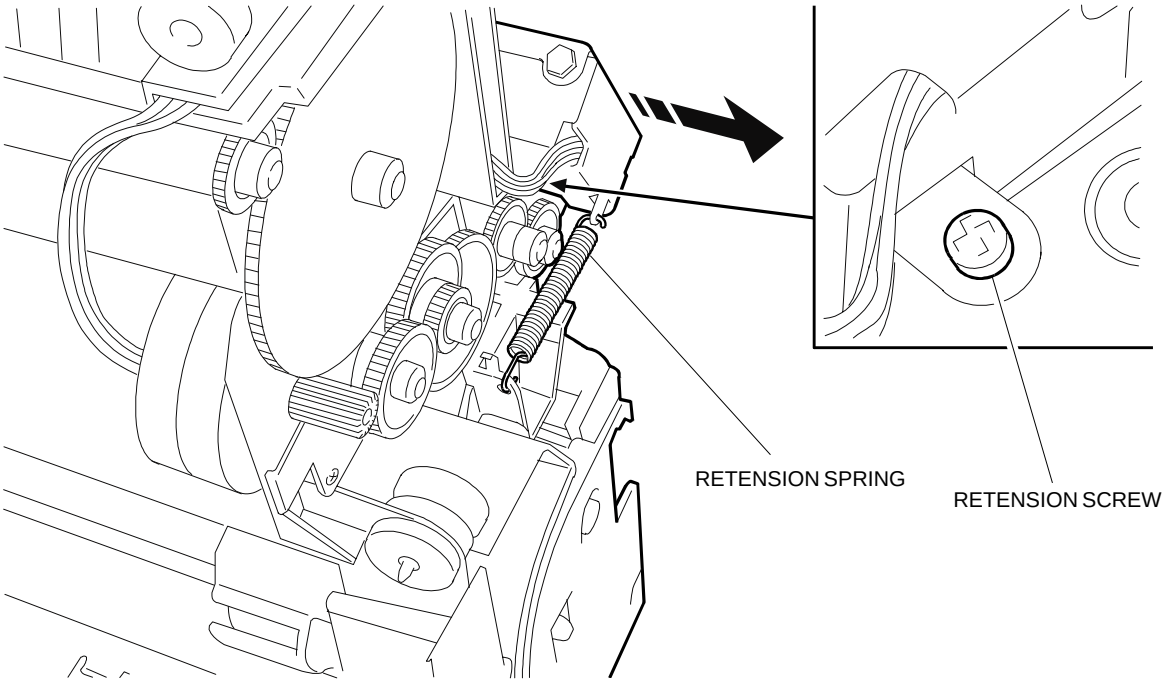


Figure 5-15

5.7.1 Cutter on the PR4 SR

- Remove the case (Section 5.2).
- Proceed as explained in Section 5.2 to access the electronic board and disconnect cutter motor connector J14.
- Remove the assembly's two securing screws and lift it out of the printer.

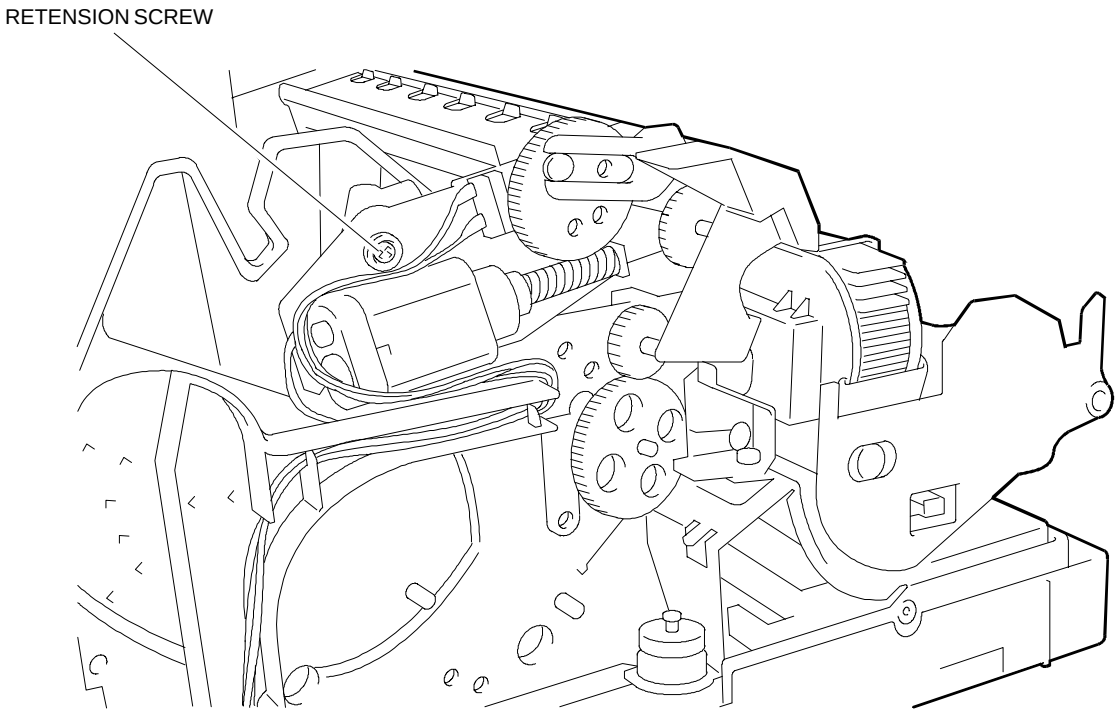


Figure 5-16

5.8 REMOVING THE PLATEN

- Remove the case (Section 5.2).
- Remove the print assembly (Section 5.4).
- Extract the plate by sliding it from the front (head side).

  PROCEED VERY CAREFULLY.

- Remove the bracket and unscrew screws **A, B, C**. You can remove the platen in the direction of the arrow shown in the figure.
- To reassemble the platen follow its disassembly procedure in reverse order and align as shown in the figure.

Note: After replacing the head readjust the parallelism and the distance between the print head and platen (Section 6.2).

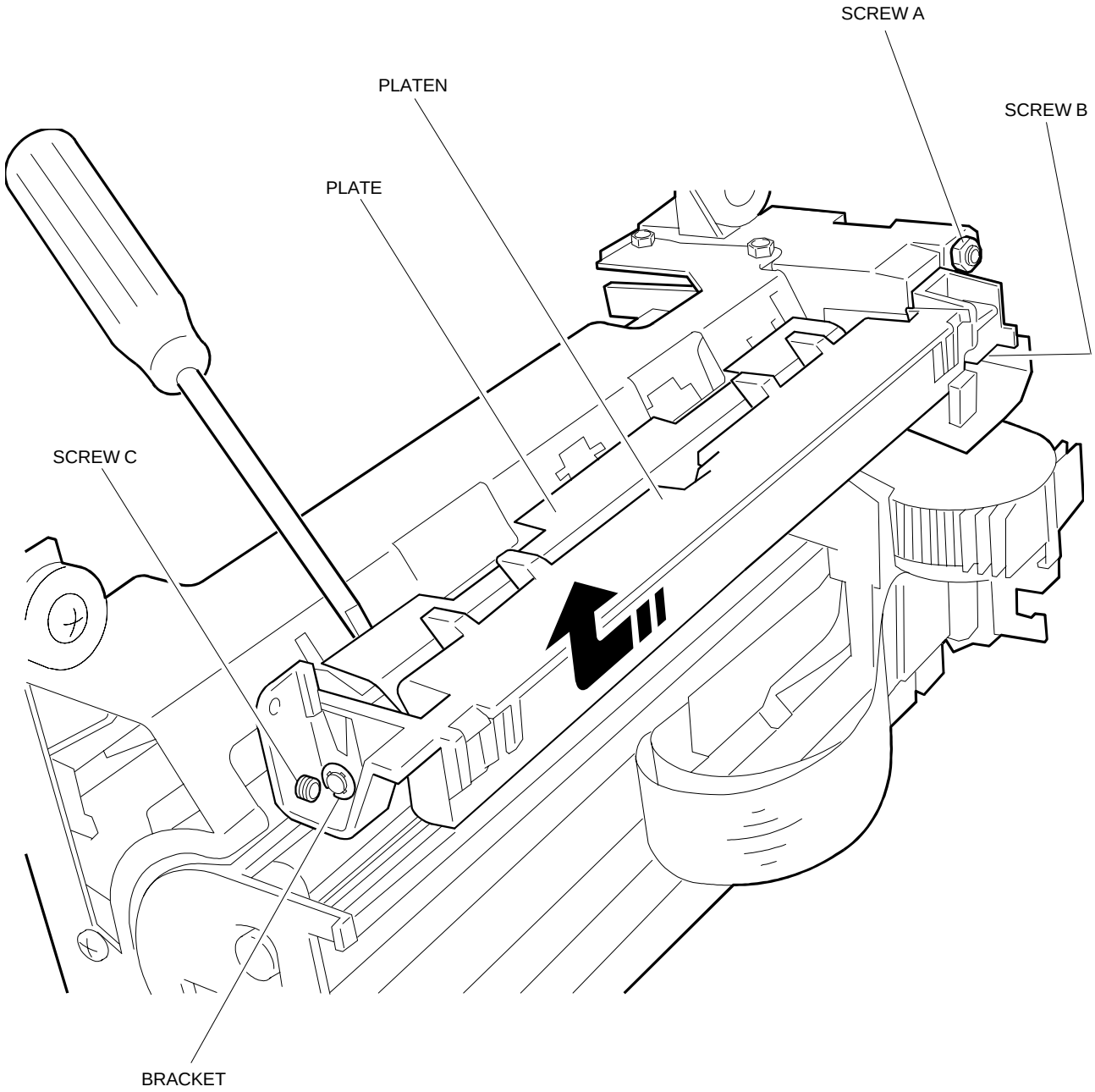


Figure 5-17

5.9 REMOVING THE CARRIAGE MOTOR

- Remove the case (Section 5.2).
- Proceed as explained in Section 5.4 to access the print assembly.
- After having removed the plastic board, remove screws **A** and **B** so that you can then remove the motor.

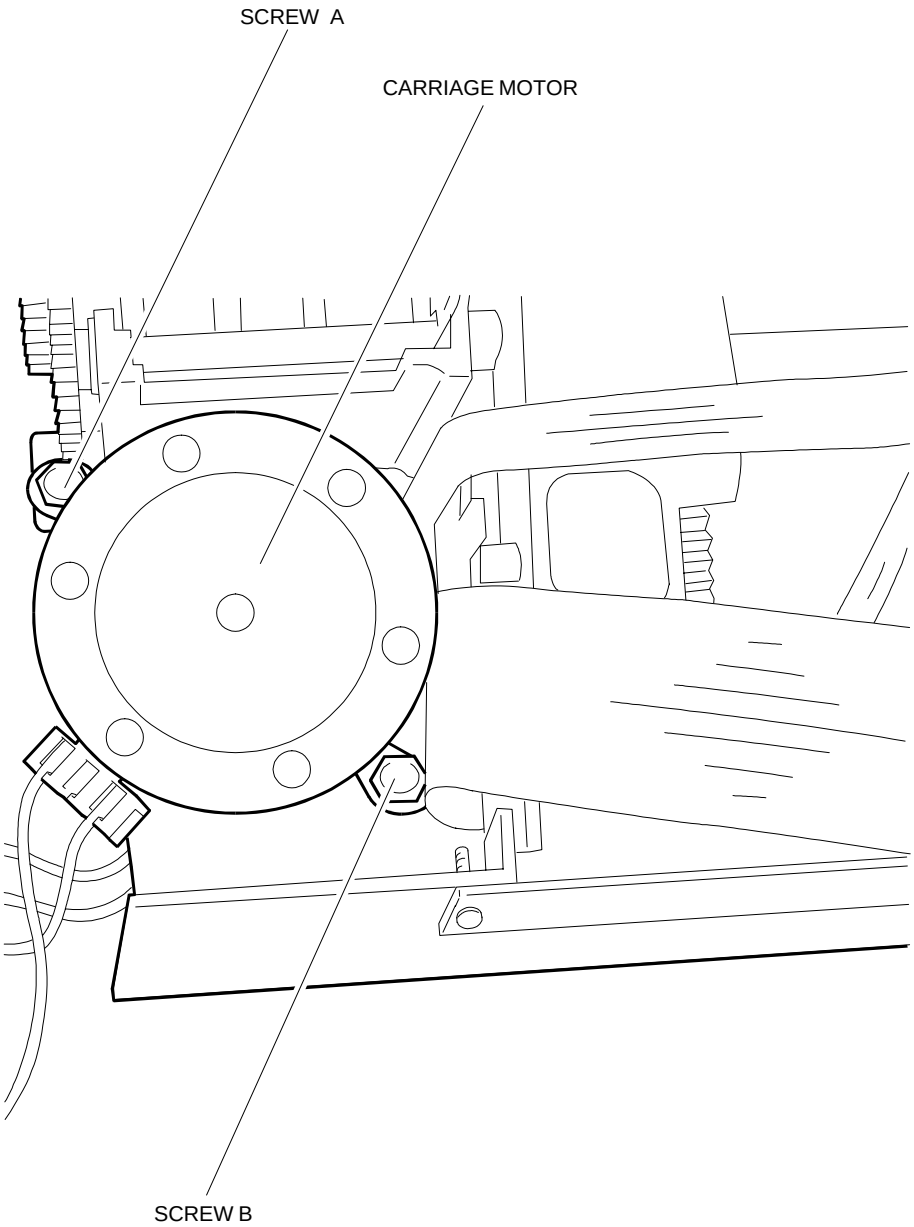


Figure 5-18

5.10 REMOVING THE RIBBON MOVEMENT PIN

- Remove the printer front cover.
- Remove the flat cable guide board upwards (Fig.5-12), after having removed the bracket. Remove the exchanger using a pair of pliers (Fig.5-13).

The pin is now free and can be removed by pulling it upwards.

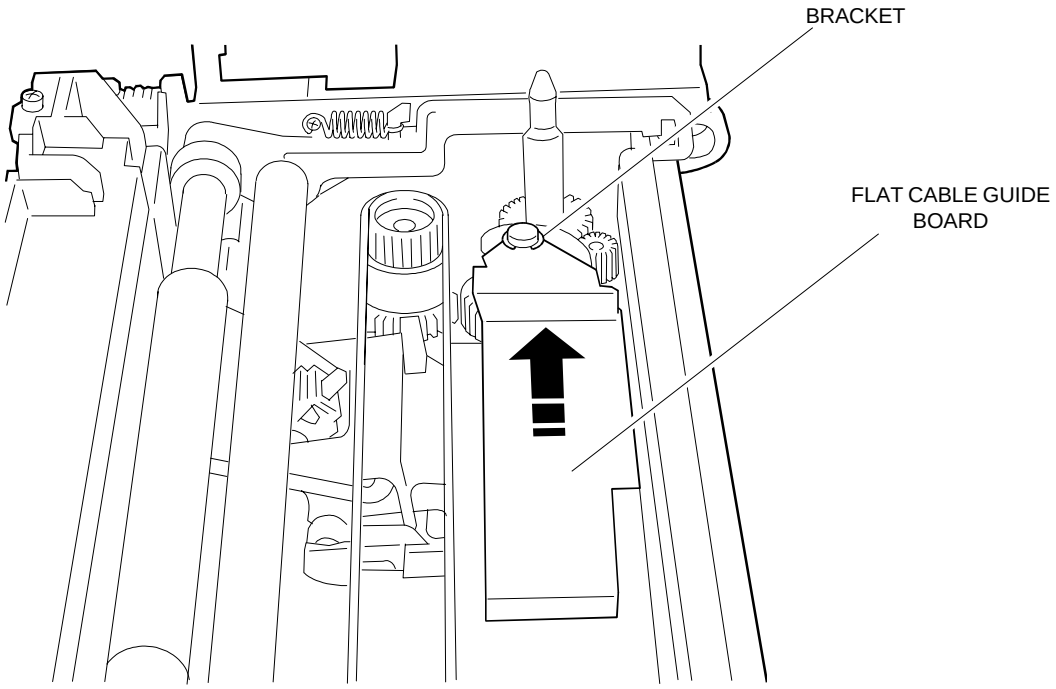


Figure 5-19

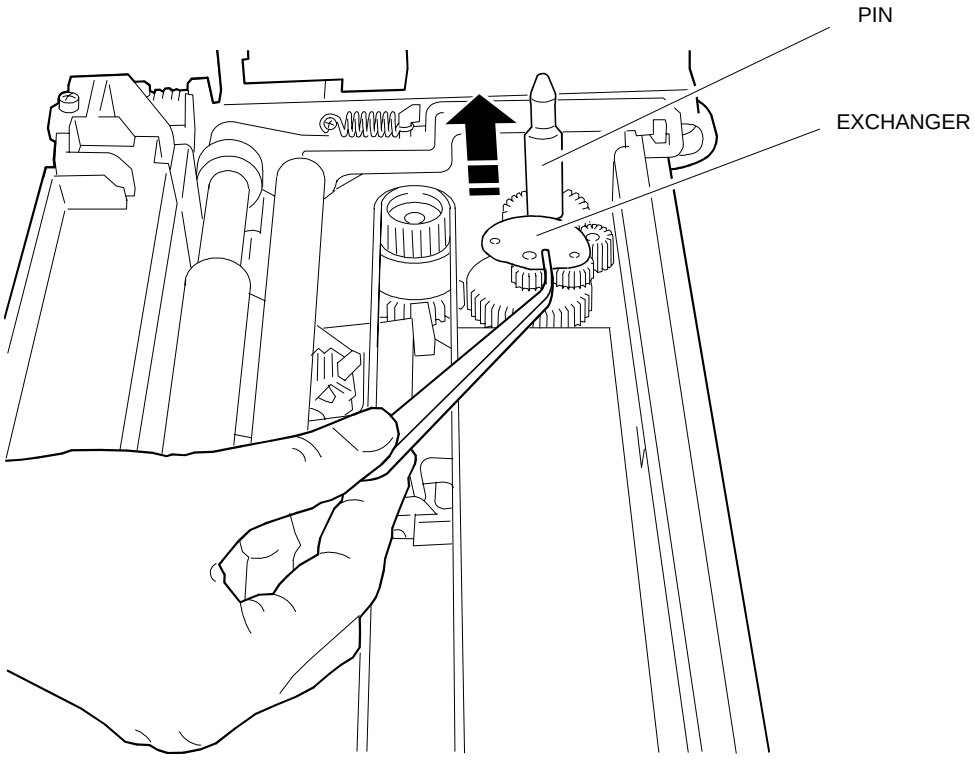


Figure 5-20

5.11 OUT OF PAPER MICROSWITCH ASSEMBLY

- Remove the case (Section 5.2).
- By following the procedure explained in Section 5.4, lift the machine from the base. You now have access to the microswitch assembly support.
- Turn the red knob until it is completely extracted.
- Slide the assembly from its slot after having separated the cables and after detaching connector J20 from the electronic board.
- After replacement, adjust the microswitch assembly by means of the appropriate screw until obtaining a correct operation.

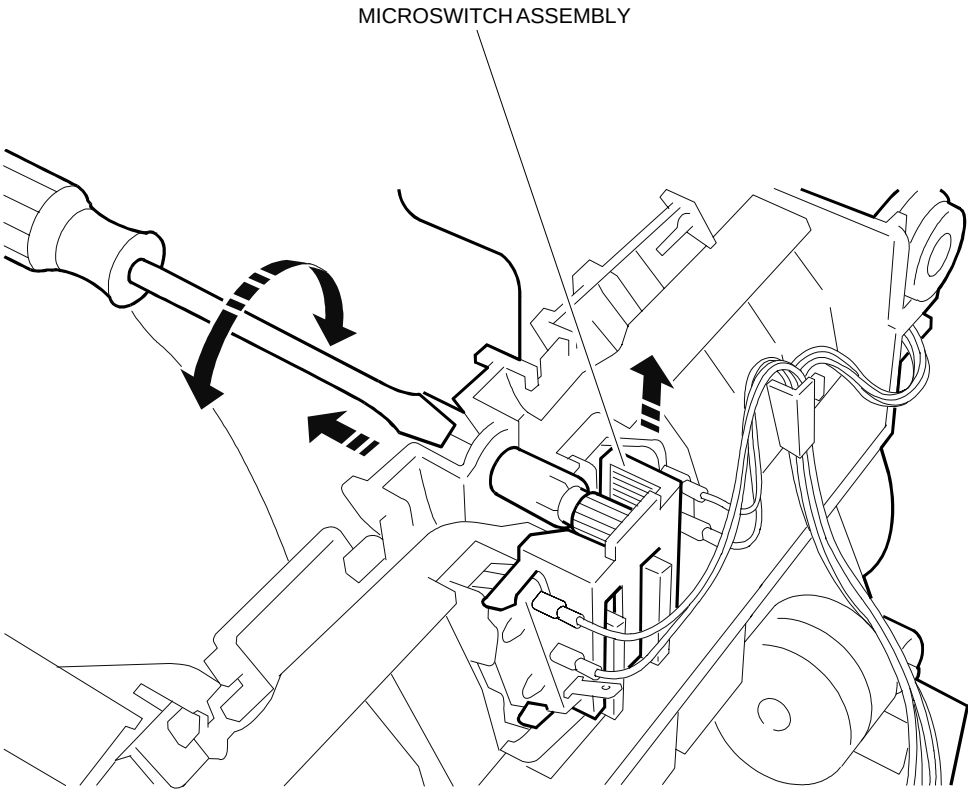


Figure 5-21

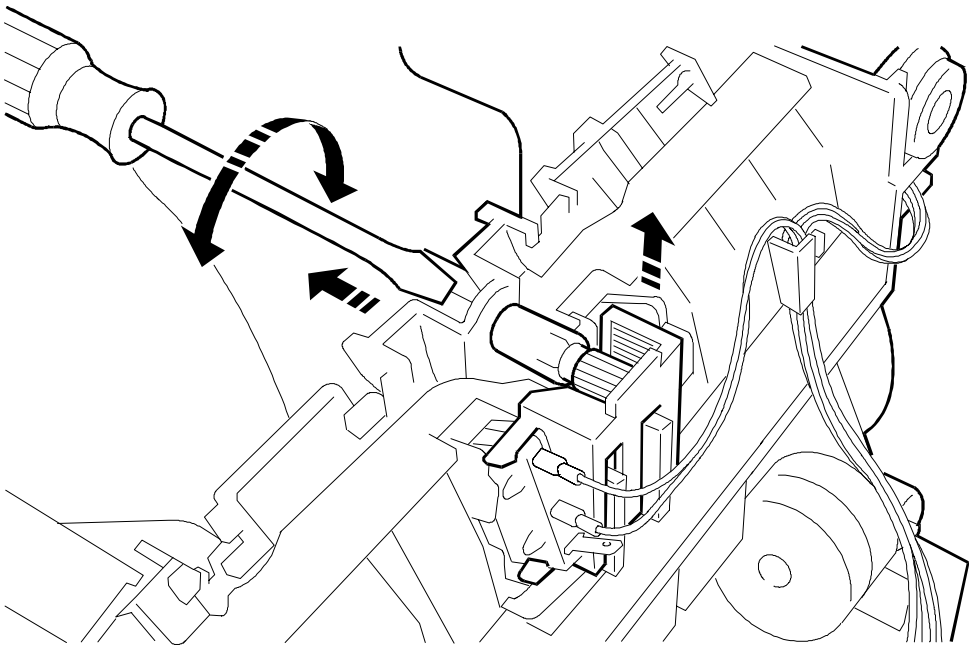


Figure 5-22

5.12 REMOVING THE REWIND CLUTCH ASSEMBLY

- Remove the case (Section 5.2).
- Remove the timing belt to free the clutch assembly. To do so rotate the pulley gear by moving the belt sideways until it goes over the flange.

5.13 REMOVING THE DOCUMENT DETECTION PHOTOSENSORS

- Remove the case (Section 5.2).
- Remove screws **1** and **2** (Sections 5.3 and 5-4) and then disconnect all the connectors from the electronic board so that the machine can be separated from the base.
- Remove the carriage motor (Section 5.8) as shown in Figure 5-23.
- Remove the photosensors by extracting them from their slots with a screwdriver (Figure 5-24).

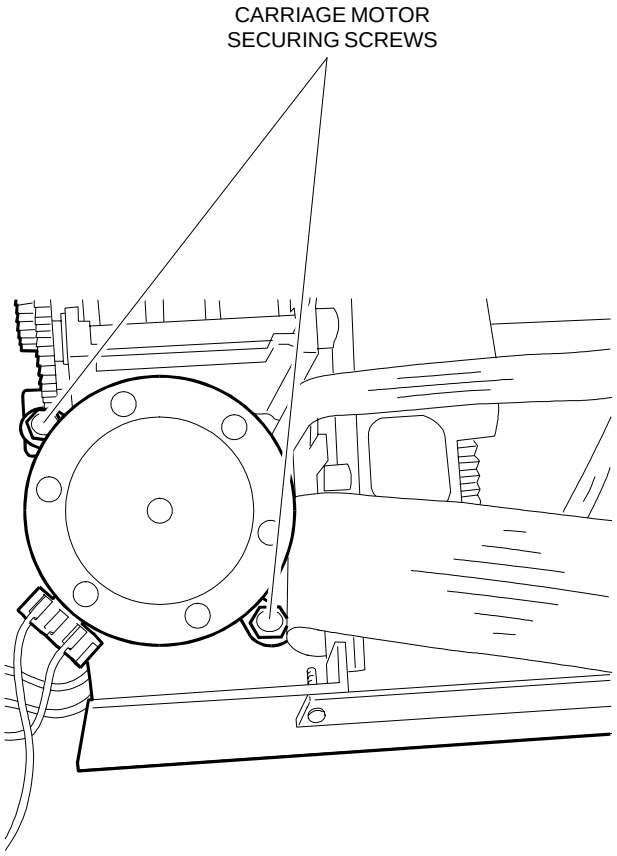


Figure 5-23

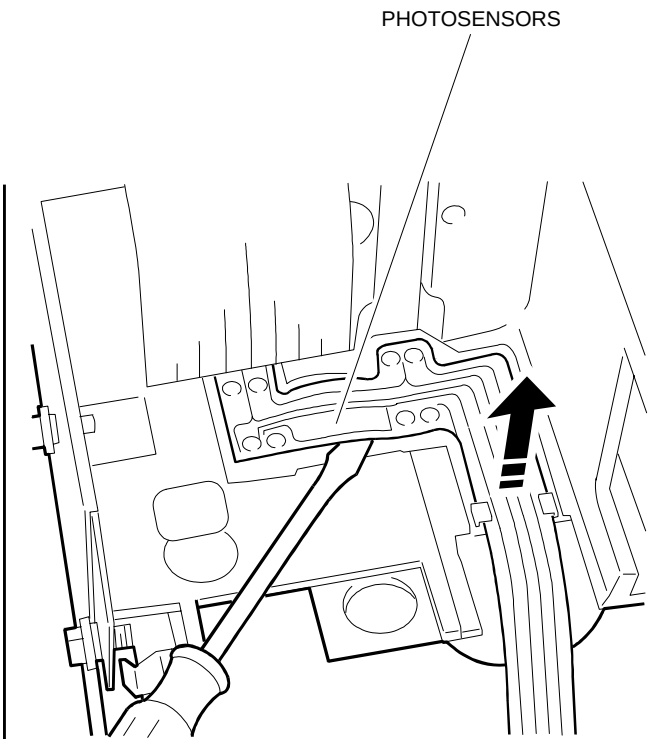


Figure 5-24

5.14 REMOVING THE SLIP DETECTION PHOTOSENSORS

- Remove the case (Section 5.2).
- Remove the print assembly (Section 5.4).
- Remove the paper guide plate in order to be able to access the photosensor assembly.

  PROCEED VERY CAREFULLY.
- Remove the assembly by unscrewing the securing screw shown in the figure.

Note The photosensor assembly must be adjusted with respect to the platen as explained in the section Adjusting the Photosensors (Section 6.9.1)

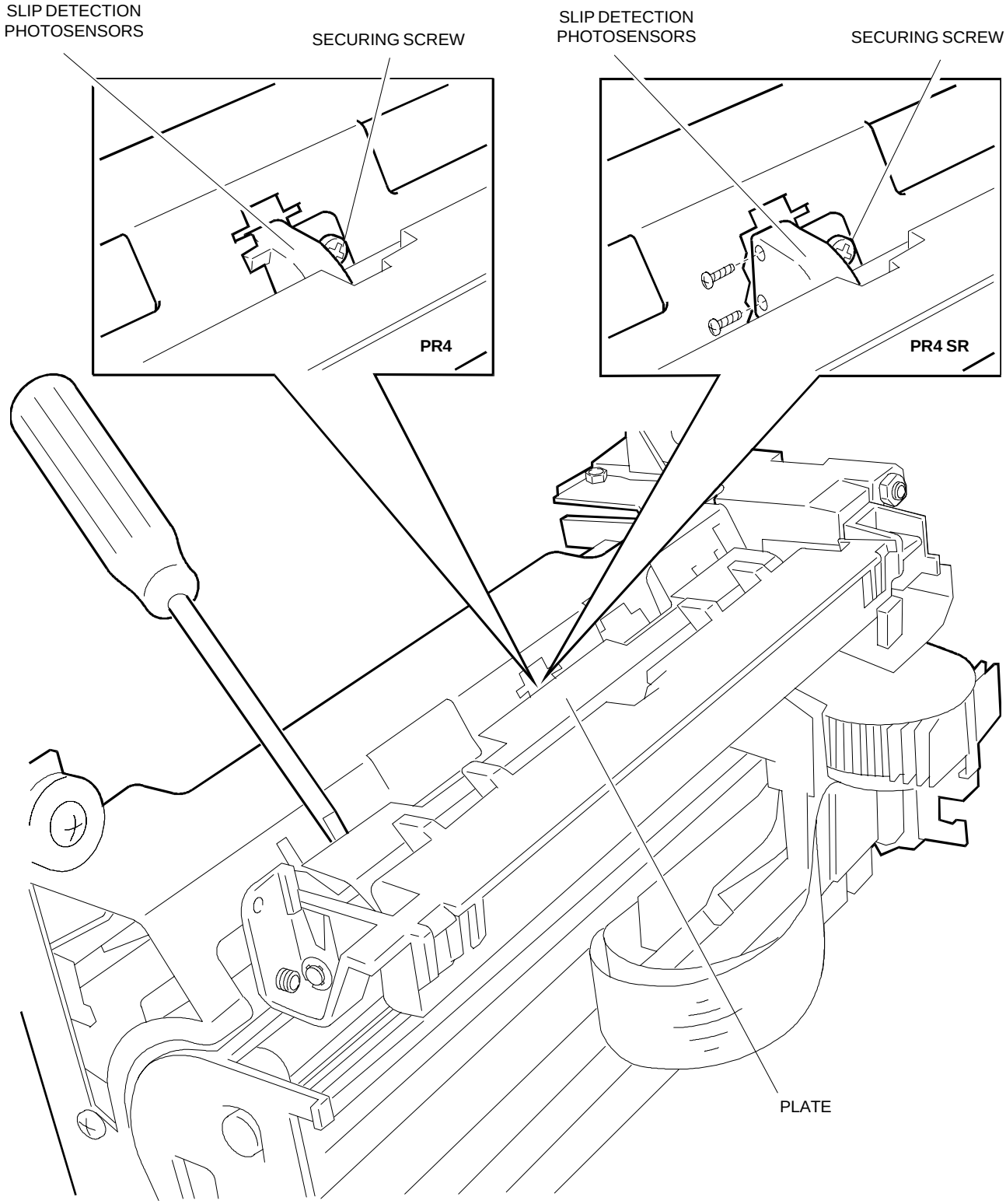


Figure 5-25

■

6. ADJUSTMENTS

The following sections describe the adjustments to be made on the different printer assemblies.

6.1 ADJUSTING THE PLATEN ON THE BASIC STRUCTURE

After replacing the platen check the parallelism between the platen and the basic structure. Parallelism with the carriage guide plate is obtained using a caliber and by adjusting the three securing screws (tolerance of ± 0.1mm).

Note After making this adjustment it is mandatory that you follow the procedure described in Section 6.2.

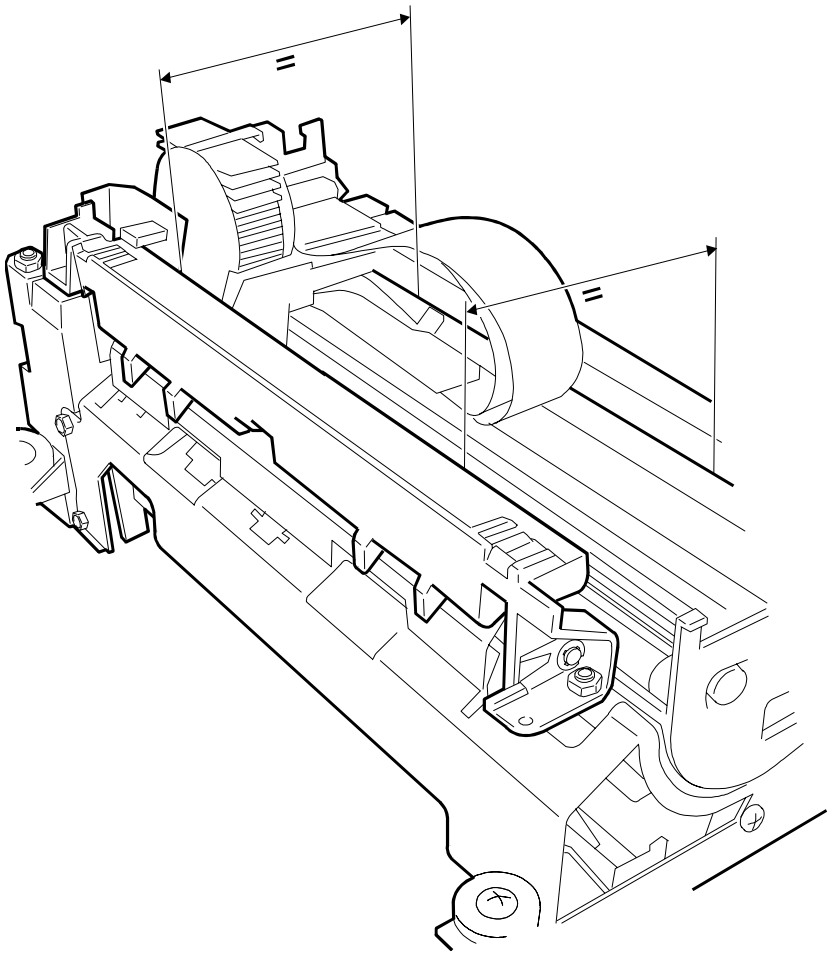


Figure 6-1

6.2 ADJUSTING THE PARALLELISM AND PRINT HEAD-PLATEN DISTANCE

By means of friction screws 923010Q, higher or lower the plate code 474031P until obtaining the parallelism between the print head and platen. Then check, using a probe, for a clearance of 0.33 - 0.37 mm between the needle profile and platen code 474018S (Fig 6-2).

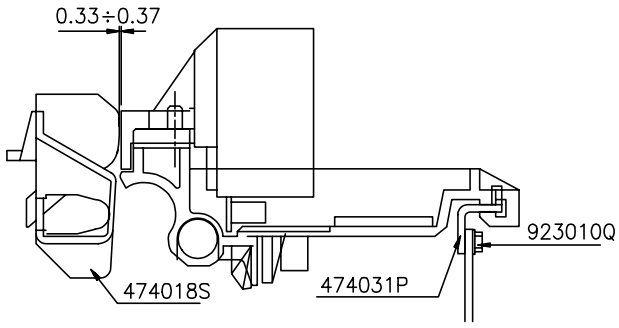


Figure 6-2

6.3 ADJUSTING THE TENSION OF THE CARRIAGE TRANSPORT BELT

Pulling the end pulley support bracket with a dynamometer in the direction of the arrow, tighten the transport belt until reaching a value of 2 Kg ± 50 gr. Using the screw code 923033B, block the bracket code 474050E on the structure code 474015P (Fig. 6-3).

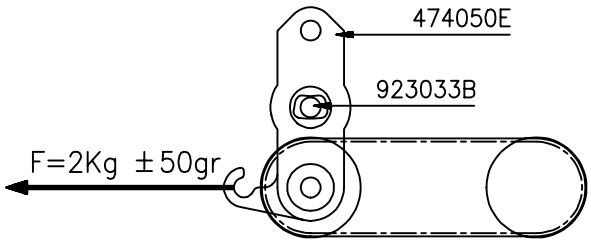


Figure 6-3

6.4 ADJUSTING THE OUT OF JOURNAL AND RECEIPT PAPER MICROSWITCH SUPPORT

PR4: Position the microswitch support half way along the total run using the tab regulator code 474120Z (Fig. 6-4) or according to the client's requirements.

PR4 SR: Position the microswitch support as follows: for a 139.7 mm wide roll, all the way forwards towards the operator; for 114.3 and 82.6 wide rolls, half way along the total run; for the 72.6 mm wide roll, all the way backwards from the operator.

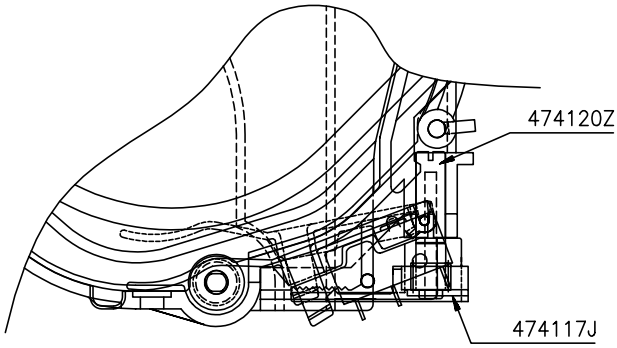


Figure 6-4

6.5 MOUNTING THE SNAP RINGS ON THE CARRIAGE TRANSPORT ASSEMBLY

During the assembly of codes 474067T, 474059B and 474026J, snap ring code 474241E must have a clearance of 0.1 - 0.2 (Fig. 6-5). Clearance is obtained by inserting a probe between the snap ring and the stop point.

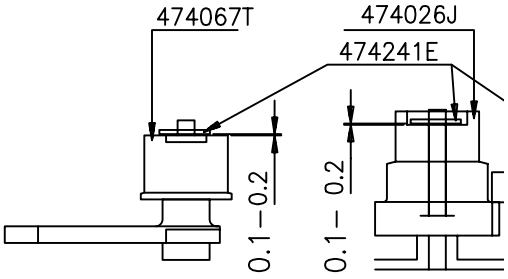
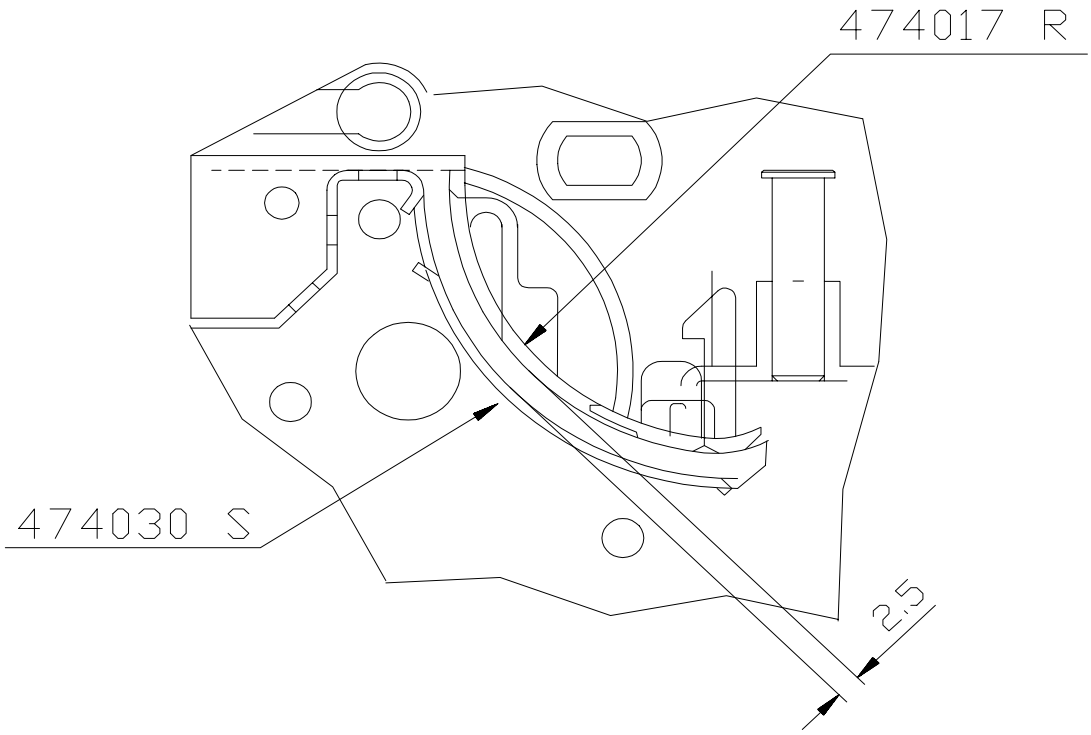


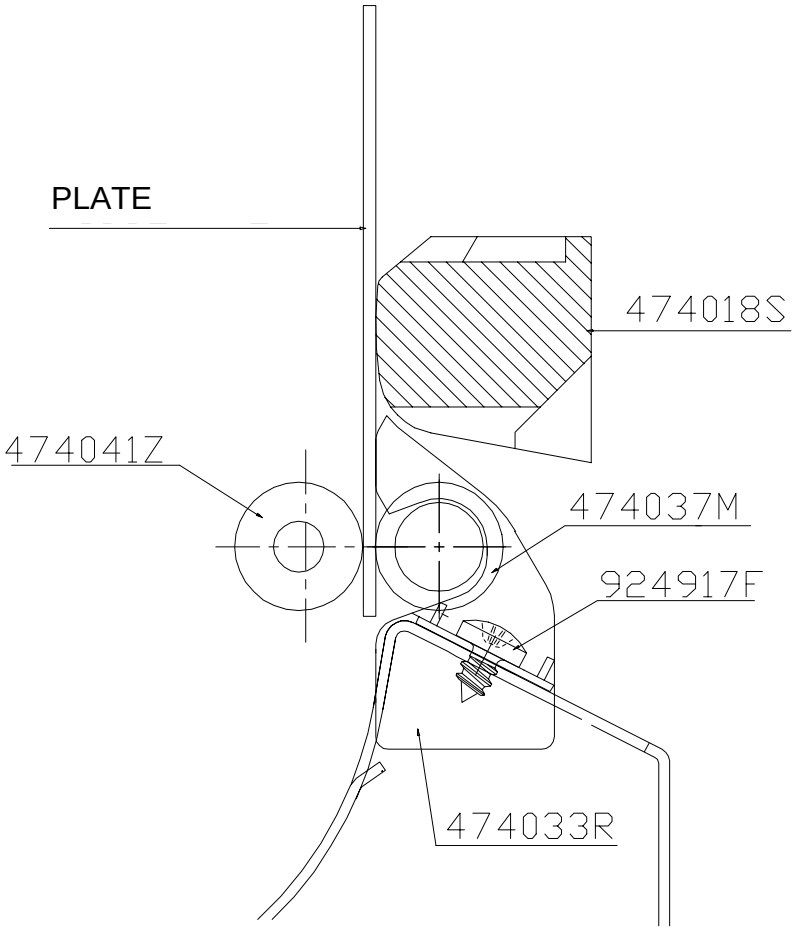
Figure 6-5

6.6 ADJUSTING THE CLEARANCE OF THE DOCUMENT INSERTION SLOT



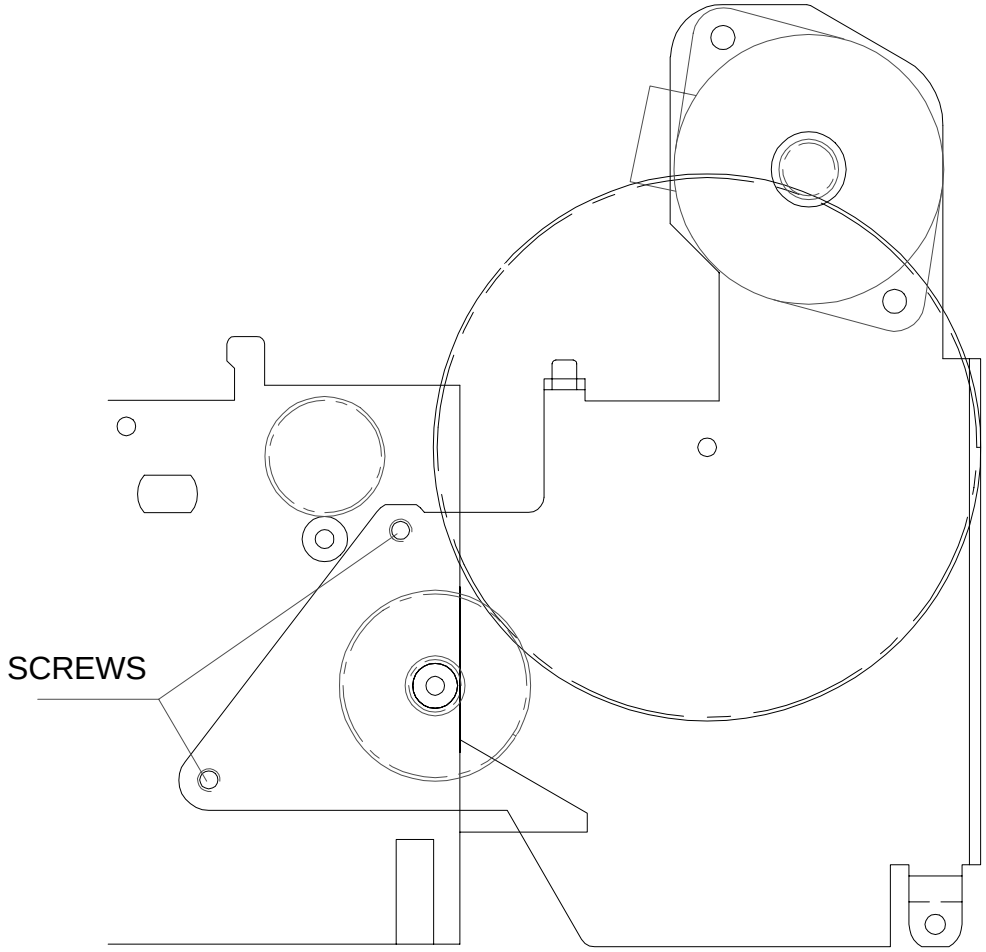
Using a specific probe, make sure that there is a clearance of 2.5 mm between the frame shield code 474030S and the frame in zama code 474017R.

6.7 ADJUSTING THE PAPER DETECTION PHOTOSENSOR



Once bar parallelism is performed, place an 0.5 mm thick plate between the rollers code 474041Z and code 474037M. Move the photo assembly code 474033R in contact with the plate and then tighten screw code 924917F.

6.8 ADJUSTING THE MICR MOTOR ASSEMBLY MESH



With the screws frictioned, adjust the position of the MICR motor assembly so there is a clearance between the gears as shown in the figure and to avoid pointings during rotation, then tighten the screws.

6.9 ADJUSTMENT MENU

To enter into the Adjustment Menu follow the instructions explained in Section 4.

After the mechanical reset performed once the menu is entered, the console will assume the following configuration:

Receipt LED ON

Journal LED ON

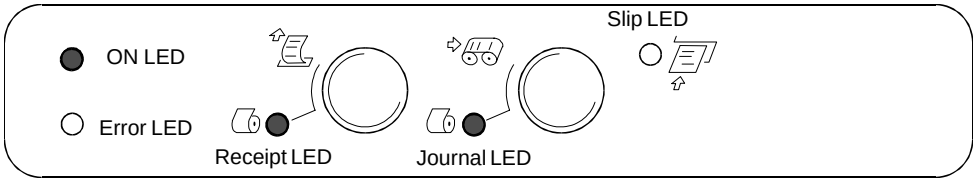


Figure 6-6

The keys have the following functions

Receipt key **(left)** _____ SKIP

Journal key **(right)** _____ CONFIRM

An acoustic signal will sound and the configuration of the LEDs will change each time the Receipt key is pressed, as indicated in the following table:

Receipt LED	Journal LED	Adjustment
ON	ON	Photosensors
ON	OFF	Micr
OFF	ON	Carriage
OFF	OFF	Exit

Pressing the CONFIRM key will switch the machine to the Adjustment Mode; an appropriate signal sounds.

6.9.1. Photosensor Adjustments

After a reset the carriage moves to the far left position where the first phase of the adjustment procedure is carried out and which consists of multiple reads of the photosensors in out of paper conditions.

The console assumes the following configuration during this phase:

Flashing Receipt LED

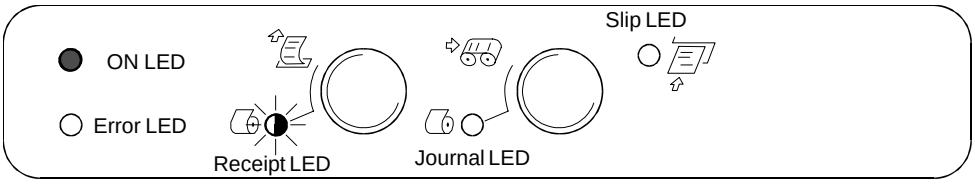


Figure 6-7

Operator Action

1. Insert the sheet of paper trying to keep it aligned to the right as much as possible.
2. Press the Receipt key.

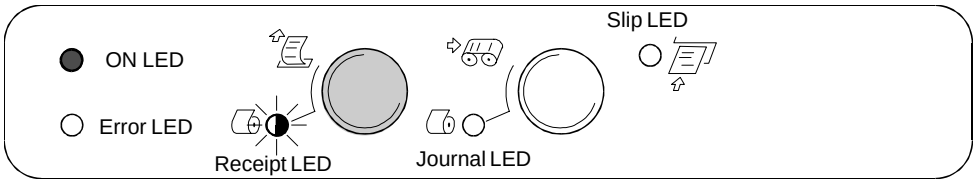


Figure 6-8

Printer Action

1. The carriage will move to the pressed roller position.

Operator Action

1. Release the paper.

Console Configuration:

Flashing Journal LED:

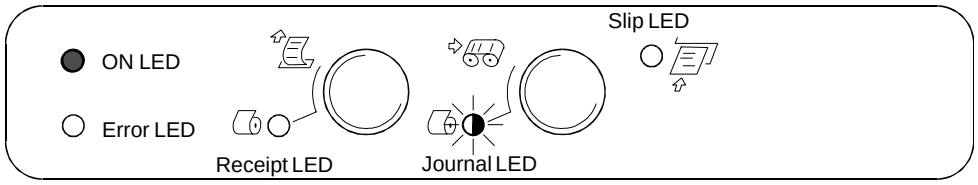


Figure 6-9

Operator Action

1. Press the **Journal key**:

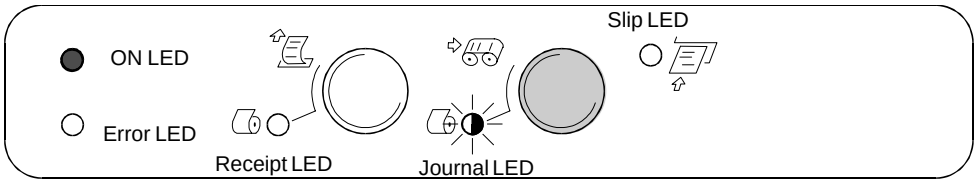


Figure 6-10

Printer Action

1. Moves the paper in position, covering all the photosensors.
2. Performs the second part of the adjustment which consists of multiple reads with paper present.
3. Stores in EEPROM the current and threshold values detected during the adjustment.
4. Prints the previous and new values on paper.
5. Ejects the paper.
6. Returns to the Adjustment Menu of Fig. 6-6.

Photosensor Adjustment Errors

Any error detected is signalled by the flashing of the console LEDs in the following way:

Error LED	Receipt LED	Journal LED	Slip LED	Photosensor Error
Blink	Off	Off	Off	Upper
Off	Blink	Off	Off	Lower
Off	Off	Blink	Off	Slip 1
Off	Off	Off	Blink	Slip 2

In case of error press the **Journal key** to return to the initial configuration.

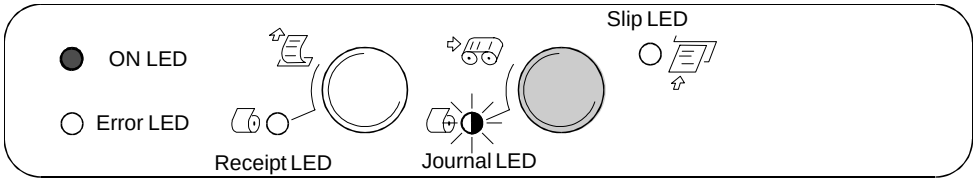


Figure 6-11

6.9.2 Adjusting the Carriage

The carriage adjustment procedure consists of two phases:

1. Carriage reset photosensor adjustment.
2. Slip alignment position adjustment.

Printer Action

1. Acoustic signal indicating entrance to the Adjustment Mode.
2. Reset photosensor adjustment.
3. Storage of the values in EEPROM and an acoustic signal indicating OK.
4. Printing on receipt of the current values of a blank, refracting photosensor and the previous threshold values.
5. Printing on receipt of the previous carriage position adjustment value.
6. Printing on receipt of the new current values of a blank, refracting photosensor with respective threshold.

Carriage Adjustment Errors

Any error is signalled by the following console LED patterns:

Error LED	Receipt LED	Journal LED	Slip LED	Error
Blink	Off	Off	Off	Photo trans. not detected
Off	Blink	Off	Off	Positioning error
Off	Off	Blink	Off	Gap lower than 3 V

Printer Action

1. Performs a mechanical reset with the values calculated during the procedure.

   Any error detected by the printer will be signalled as follows:

Error LED	Receipt LED	Journal LED	Slip LED	Error
Off	Off	Off	Blink	Carriage reset error

Otherwise:

Printer Action

1. The carriage moves to the mechanical reference to drag the alignment roller.
2. Continuous acoustic signal.

Operator Action

1. Open the front cover.
2. Remove the cartridge.
3. Make sure the triangle (indicated in "**Area A**" on the right-hand side of the carriage code 474063X) is aligned with the index mark on the head adjustment plate code 474031P.

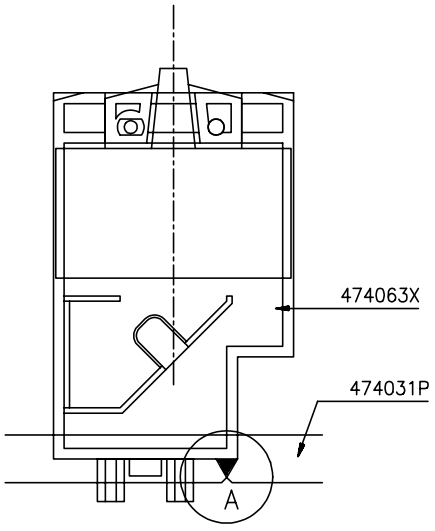


Figure 6-12

4. If it is not aligned:
   - Press the Receipt key and move it to the left.
   - Press the Journal key and move it to the right.
5. When the triangle is in the correct position, close the **front cover**.

Printer Action

1. Stores the value in EEPROM.
2. Acoustic signal indicating that adjustment is complete.

Repeat the operation, which cannot be considered as a check since the carriage will always start from a fixed position with disaligned references. The operation must therefore be correctly completed before a check can be made.

Operator Action

1. Open the front cover.
2. Refit the cartridge.
3. Close the cover.

Printer Action

1. Return to the Adjustment Menu of Fig. 6-6.

6.9.3 MICR Adjustment

This adjustment must be made using the MICR calibration card code 474245 A (special check) on which the reference value is printed on the center bottom part of the card. Before beginning, make sure that the paper rolls are installed since the printer will have to print the values referring to the calibration card.

First part of the calibration procedure:

Printer Action:

- Prints a message indicating entrance to the calibration procedure. (ADJ MICR)
- Prints the first range of reference values of the following table.

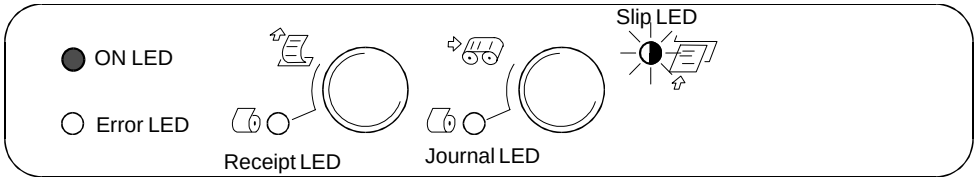
80 - 84 <===
85 - 89 <===
90 - 94 <===
95 - 99 <===
100 - 104 <===
105 - 109 <===
110 - 114 <===
115 - 120 <===

Operator Action:

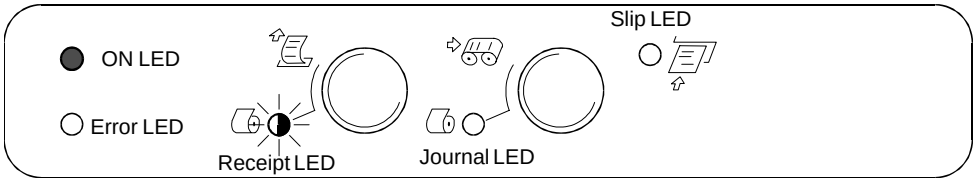
By pressing the **RECEIPT** key the values indicated in the table are progressively printed.
When the reference value of the calibration card is included within the range of values printed by the PR4, press the **JOURNAL** key and perform the second part of the calibration cycle.

Second part of the calibration procedure :

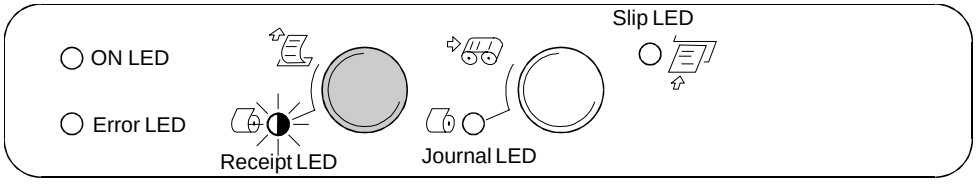
Console configuration:
Blinking Slip LED



Operator action:
Insert the check
Printer action:
Inserts the check
Console configuration:
Blinking Receipt LED:



Operator action:
Press the **RECEIPT** key



Printer action:
Performs a read cycle.

Calibration is performed by carrying out the second part of the calibration procedure FIVE TIMES. The operator must therefore insert the check five times.

Upon completion the outcome of the calibration procedure will be printed:

OK	**Calibration Ok**
A/D saturation	
Too many peaks	**Too many peaks (noise)**
Verify head	**Verify head connection (inverted)**
Not OK	

■

7. LUBRIFICATION

LUBRIFICATE USING FOMBLYN Y06 OIL CODE 757283C (SUPPLIER: AUSIMONT, A MONTEDISON GROUP COMPANY)

1. CARRIAGE SLIDE SHAFT CODE 474064Y, 2 DROPS TO THE RIGHT AND 2 TO THE LEFT; THEN SOAK FELT CODE 474243 G IN 0.2 cc OF THE SAME OIL.

LUBRIFICATE USING "MAGNALUBE" TYPE TEFLON GREASE CODE 3233350X

1. CARRIAGE PULLEY CODE 474026J AND STUD CODE 474025R
2. RETURN PULLEY CODE 474067T AND STUD CODE 474025R
3. STUD CODE 474025R WITH GEAR CODE 474062W AND RIBBON EXCHANGER ASSEMBLY CODE 474059B.
4. LANCE STUD CODE 474029V WITH GEAR CODE 474058A AND LANCE 474057Z.
5. ROTATIONAL AREA ON BUSHINGS CODE 474040C OF THE SLIP FEED SHAFT CODE 474037M
6. FEELER CODE 474065Z IN THE COUPLING AREA WITH SLIP CONTRAST SHAFT CODE 474041Z AND PLATE CODE 474031P.
7. STUD CODE 474027K (N° 2+ 1) AND RELATED GEARS.
8. ALIGNMENT SHAFT SUPPORT BRACKET CODE 474071X WITH SHAFT CODE 474043T.
9. PLATE AREA CODE 474031P ON WHICH THE CARRIAGE CODE 474063X SLIDES.
10. FEELER SPRING EYELETS CODE 474190Y AND RELATED HOOKS.
11. TERMINAL PART OF CARRIAGE SHAFT CODE 474064Y ON A ZAMA STRUCTURE.
12. STUD CODE 474081J AND RELATED GEARS ON CRADLE CODE 474080V.
13. CUTTER SLIDE BOSS AND SLIDE AREA ON LOWER STRUCTURE.
14. BLADE RIGHT AND LEFT TERMINALS FROM 37 TO 39 ON THE LOWER BLADE SLIDE AREA
15. BETWEEN RIVETED STUD AND HELICAL WHEEL AND BETWEEN THE HELICAL WHEEL AND THE WORM SCREW ON THE MOTOR
16. BETWEEN THE RIVETED STUD AND THE GEAR
17. BETWEEN THE TEETH OF THE ENTIRE KINEMATIC CHAIN OF THE MICR ASSEMBLY (MOTOR GEAR) PAGE 6 OF THE SPARE PARTS CATALOGUE
18. SHAFT ROTATIONAL AREA CODE 474086P (N°2) ON CRADLE CODE 474080V AND ON THE CENTRAL SIDE CODE 474085N.
19. SHAFT ROTATIONAL AREA CODE 474091L (N°2), AS ABOVE.
20. SHAFT ROTATIONAL AREA CODE 474093N (N°2), AS ABOVE.
21. SHAFT ROTATIONAL AREA CODE 474094P (N°2), AS ABOVE.

LUBRIFICATION OF THE PARTS OF THE SINGLE ROLL USING TEFLON GREASE

1. SHAFT ROTATIONAL AREA CODE 474224V ON CRADLE CODE 474223U
2. SHAFT ROTATIONAL AREA CODE 474225W ON CRADLE " "
3. SHAFT ROTATIONAL AREA CODE 474226X ON CRADLE " "
4. SHAFT ROTATIONAL AREA CODE 474210B ON STRUCTURE CODE 474280A.
5. BETWEEN STUD 474081J AND COGWHEEL CODE 474084M.

NOTE: THE CODES ARE THOSE FOUND IN THE SPARE PARTS CATALOGUE.

■

8. INSTALLING THE DRAWER AND DISPLAY CARD OPTION

- Open the machine and insert the drawer and display drive card by following the procedure described in Section 5.4.
- Insert the card in the slots on the base (see Figure 8-1) and then attach the connection cable to the main board.

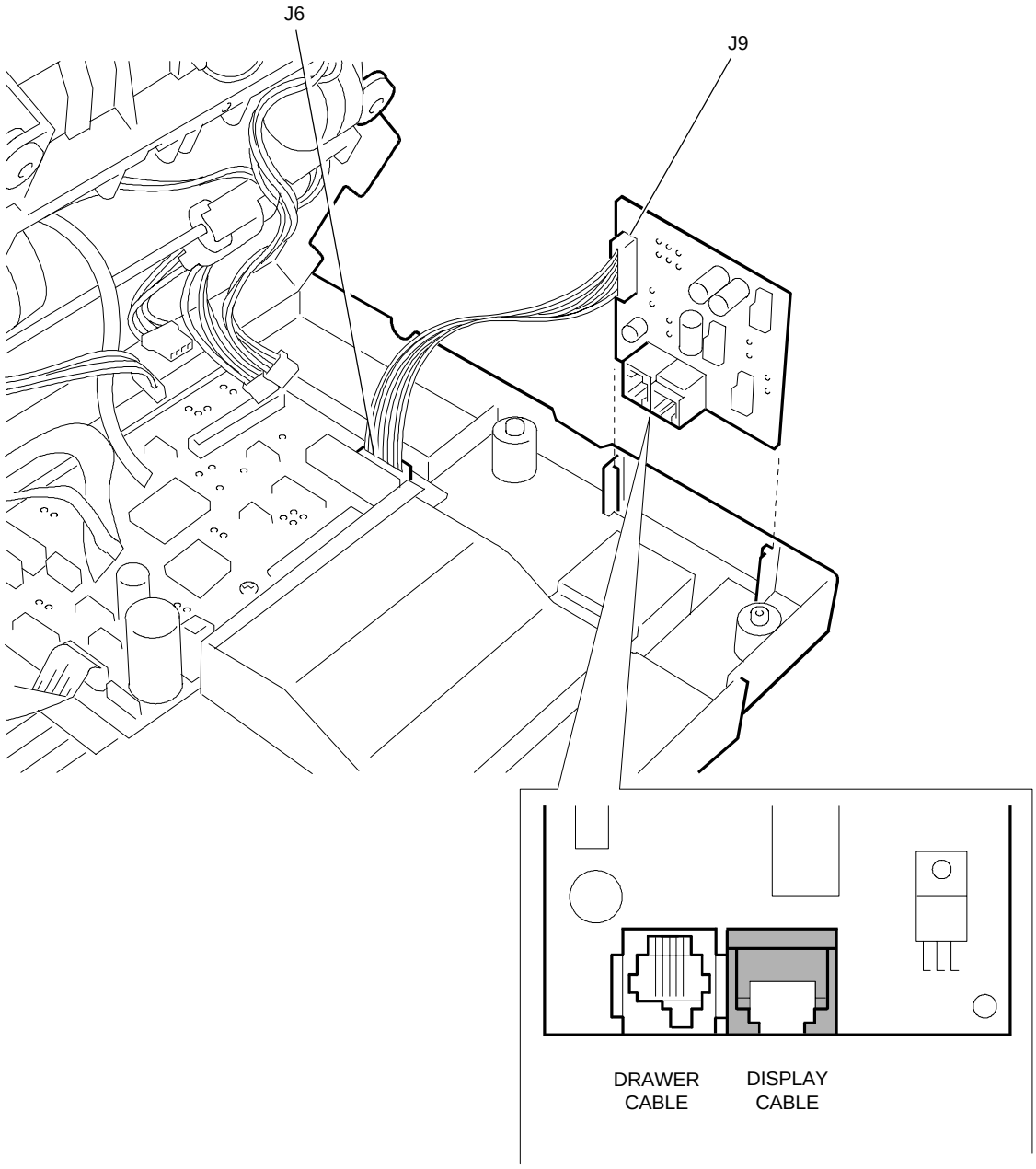


Figure 8-1

■